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Inside Activision's Dark Side: New engine powers explosive sequels

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- SWAT 2
- Urban Assault
- M.A.X. 2
- WarGames
- NAM

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October 1998

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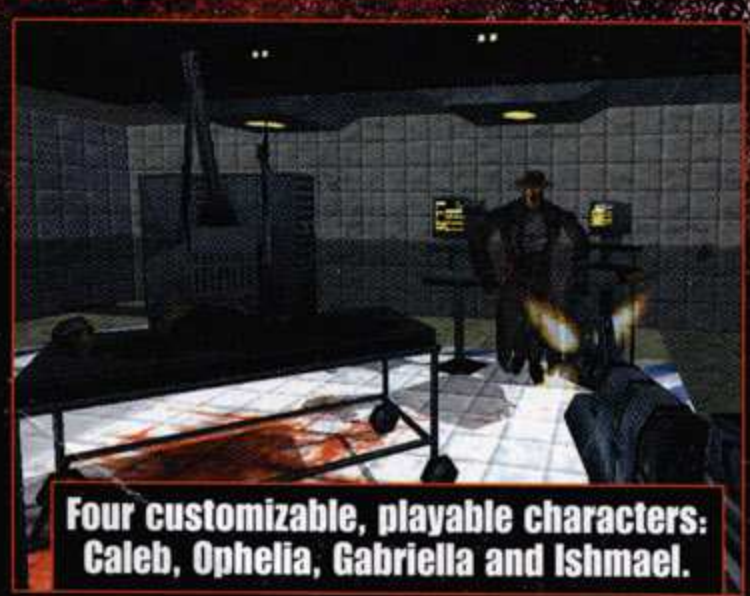
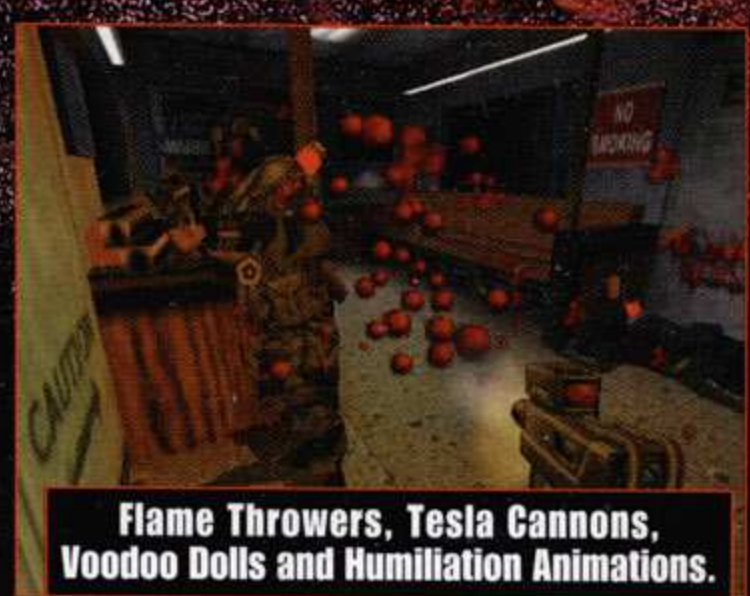
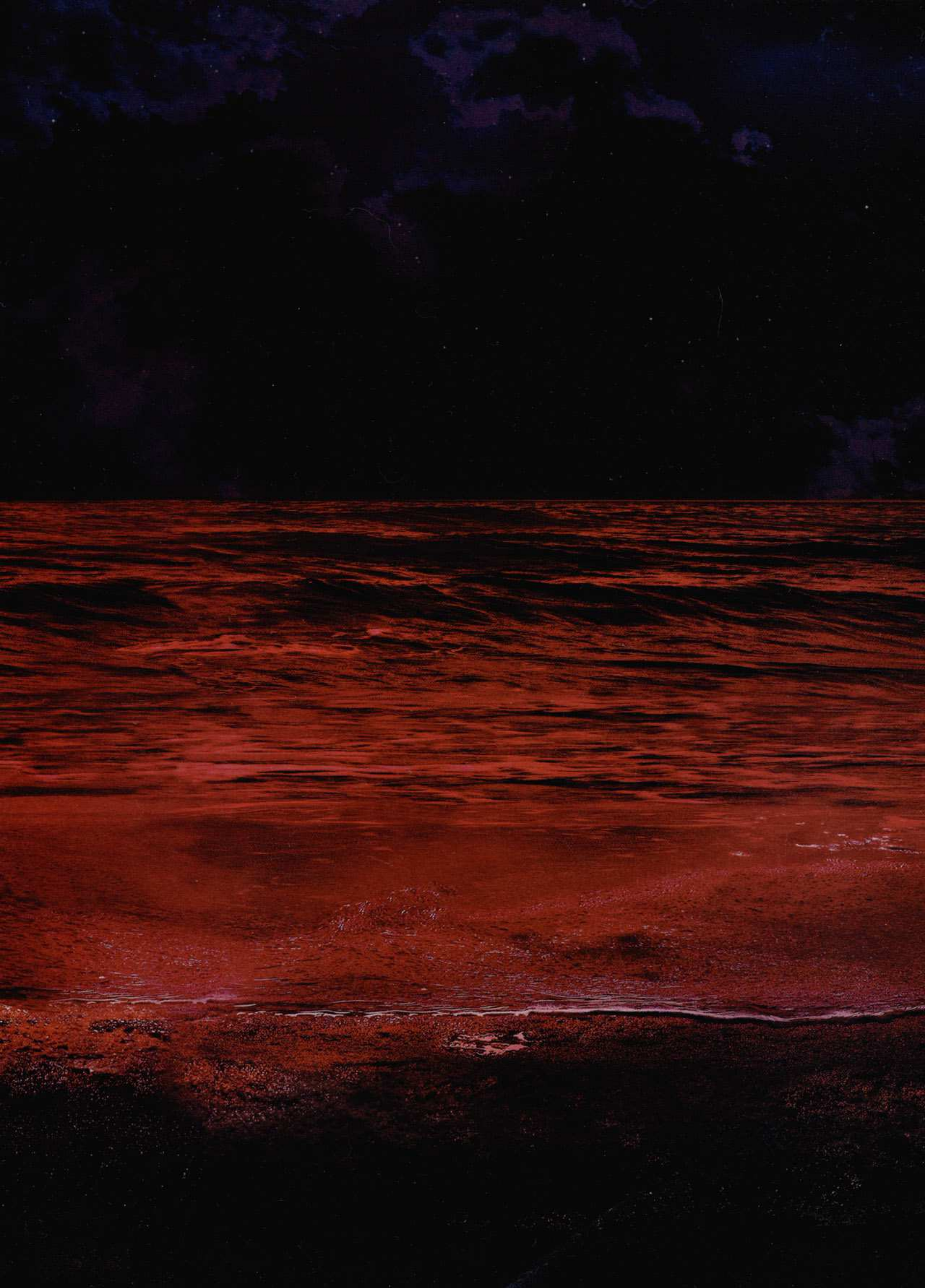


Four customizable, playable characters: Caleb, Ophelia, Gabriella and Ishmael.



Flame Throwers, Tesla Cannons, Voodoo Dolls and Humiliation Animations.



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Albert Szent-Györgyi

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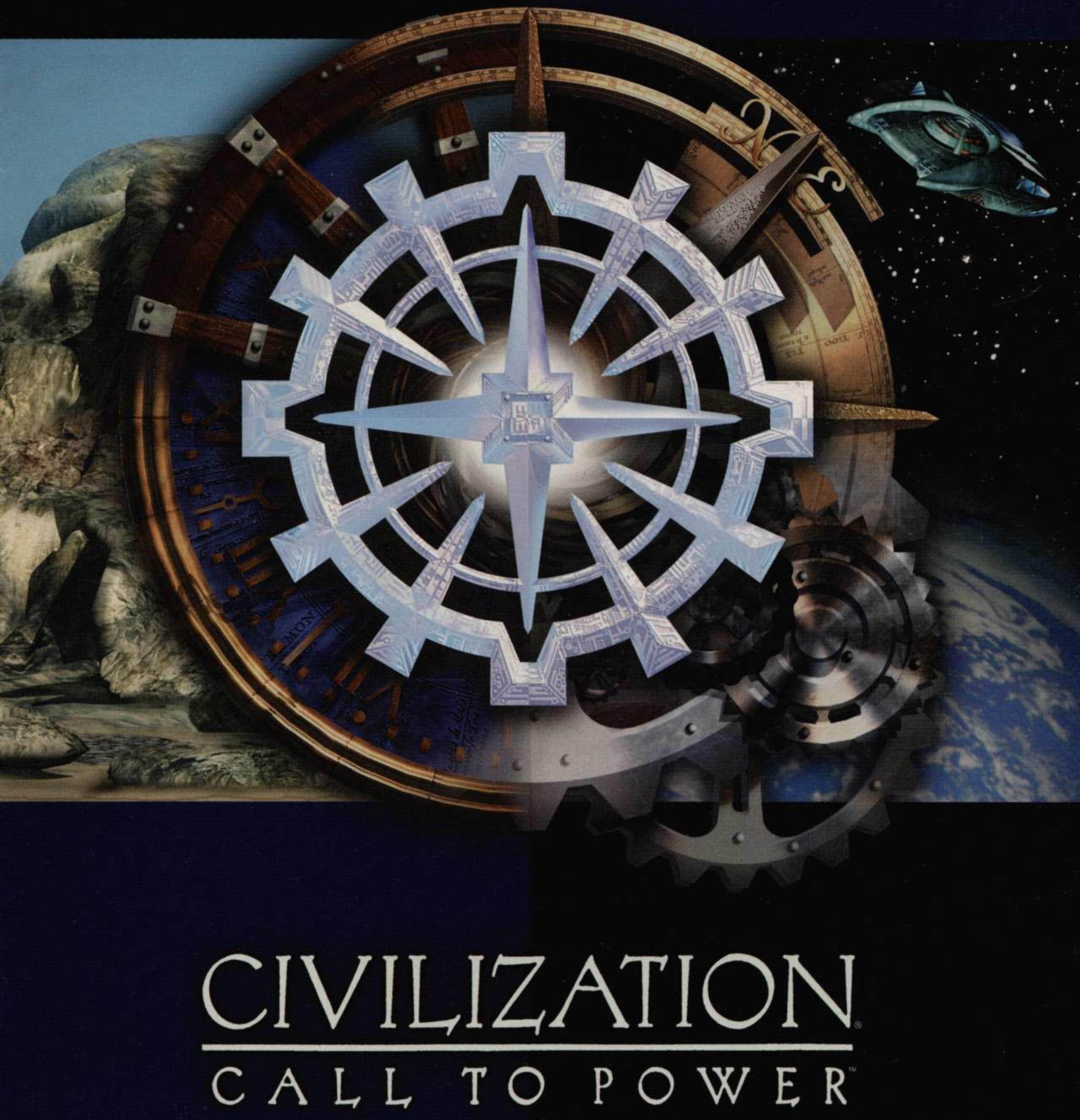

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PC GAMES

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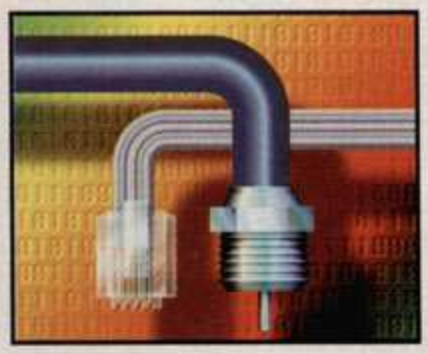
By Daniel Morris

Our cover story gives you all the exclusive, in-depth details as Groove and the gang roll through Vegas in **I-82** and highly detailed mechs make the move to outer space in **Heavy Gear II**. Fueled by the powerful new Dark Side engine, these blockbusters promise awesome graphics and stunning gameplay advances.

62 Evolution of a Jungle
By Richard "Levelord" Gray

Levelord, aka Richard Gray, has been building great levels since you were in diapers. Well, maybe not that long, but Ritual's lead SiNner has designed rollicking levels for Doom, Duke Nukem 3D, the first Quake Mission Pack, and now SiN. In a *PC Games* exclusive, he walks us through the creation of a SiN level and shares his design philosophies and techniques.

68 Broadband, baby! YEAH!
By David Gerding



Cable, ISDN, ADSL—these high-speed Internet connections give gamers the low-ping advantage. Once costly and kludgy, they're just now starting to come into their own. Get a look at the technology, the costs, and the outlook for these LPB makers.

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32 Game Wire
By George T. Chronis

Think Raven is all about fantasy-based action? Check out Soldier of Fortune, the developer's ode to mercenary badasses. Plus: Chris Taylor gasses up at Microsoft, Origin readies an action-packed air-combat game, and a first look at Microsoft's force-feedback wheel.

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PC Games Online has joined with Happy Puppy and Games Domain to provide even more great gaming coverage! For more details, see www.pcgames.com.

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EDITORS' NOTE

G.CHRONIS W.KNIBBE

Keep 'Em Comin'!

We know there are times you hate the jaded, holier-than-thou game-mag editors. Usually it's when you read a rash of columns that bemoan "There are too many games piling up on my desk" or "It's all been done before, so all new games suck."

We gotta say it's pretty hard to sit here in our San Francisco offices, surrounded by a zillion games and all manner of toys, and not have a great time. The business of putting out a magazine may keep us from playing as much as we'd like, but there are plenty of times when excellent new games come our way and remind us just how lucky we are.

This month has been one of those times, bringing with it a batch of new games that, when we got our hands on 'em, wowed us. For example, even in pre-beta stage, Homeworld looks incredible. It's a fresh new take on the strategy genre—and it brought huge smiles to our faces. Check out our preview on page 81.

We also got to spend a couple days looking at Heavy Gear II and I-82 development. The graphical and tactical advances Activision's new Dark Side engine gives these games will amaze you. Our exclusive, in-depth feature begins on page 44, and an exclusive Heavy Gear II .AVI is on this month's disc.

Then SiN waltzed in our door. You'll find the demo on this month's CD, too, and it's a must-play hoot! Ritual has taken the Quake II engine and refined it wonderfully. The animations are great, the levels are right out of Duke Nukem 3D, and not since that game have we had so much frantic multiplayer fun. We liked it so much, we put up a multiplayer server at **sin.pcgames.com** and conned Ritual's Levelord into writing us a treatise on level design (page 62).

Finally, we got hooked on Urban Assault, the next flagship for the action/strategy hybrid (at least til Uprising 2 ships). It has a large number of flaws, but there's no question it offers addictive, challenging gameplay—and multiplay works right out of the box. See our review on page 87.

These are just a few of the games we've been losing sleep to this exhilarating month. Are we enjoying ourselves? Most definitely.

George T. Chronis

Willem Knibbe

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Windows 3.x: In Program Manager, select "File" and "Run". Type x:\pcgames.exe (where "x" is the letter of your CD-ROM drive) and hit Enter. The interface will recognize your OS and run the 16-bit version.

Recommendation: For best results, run the interface in 16-bit high color.

Tech help on running the demos is the responsibility of their respective publishers. Tech-help phone numbers have been provided in the demo descriptions. For support on running the CD interface, direct queries to *ctou@pcgames.com*.

Using the Web Link

We've supplied a quick-hit Web link for more information. Whenever you see the Web link, click to jump straight to that site. The first time you run this function, you'll be prompted to locate your Web browser's executable file. Default directories for these files are:

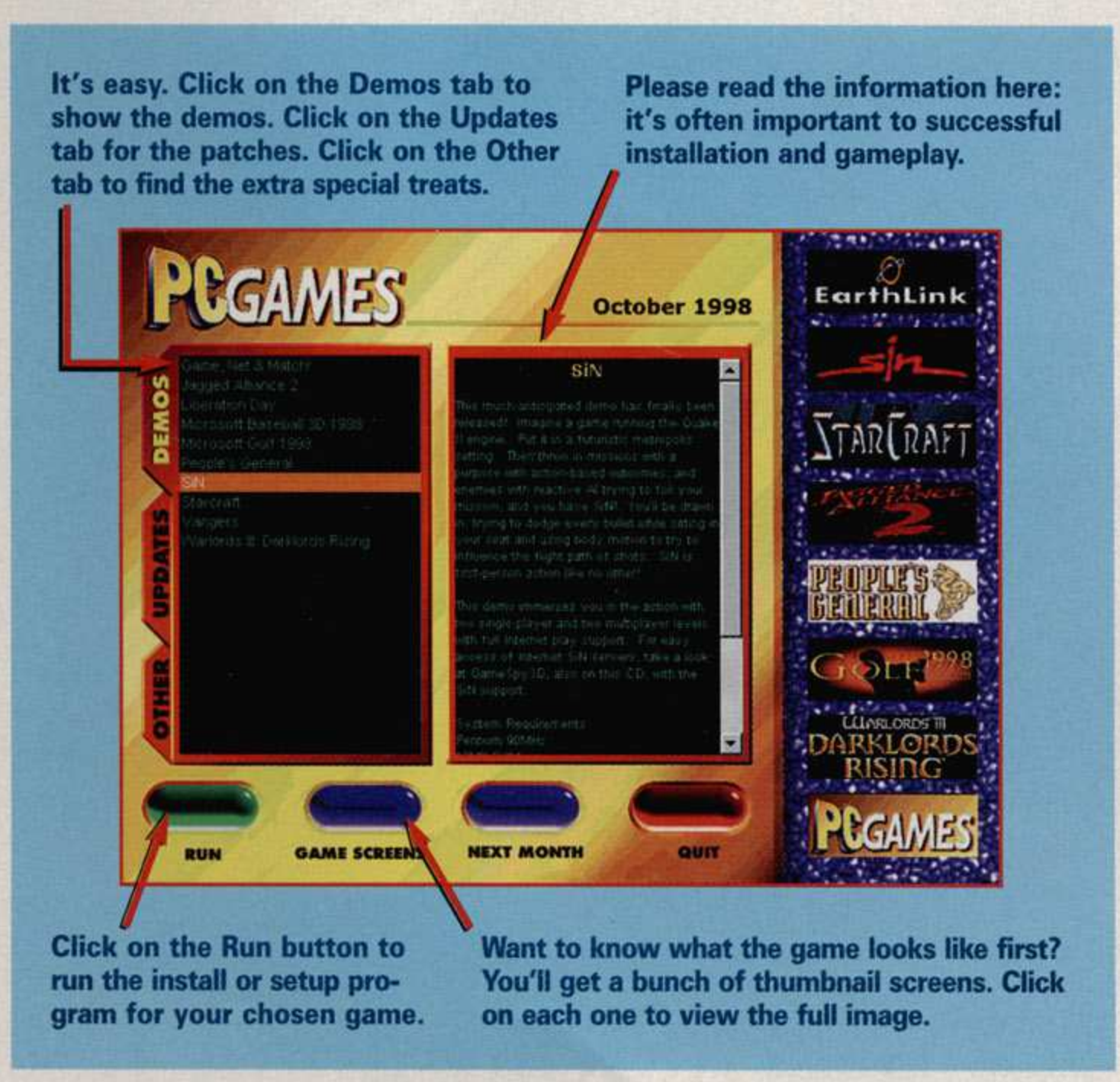
C:\ProgramFiles\InternetExplorer\iexplore.exe

C:\Program\Files\Netscape\Communicator\Program\netscape.exe

Double-click on the iexplore.exe or netscape.exe to run the browser. This information is then stored in the *PC Games* directory on your C: drive.

BONUS!
SiN Demo Cheats

Tired of getting blasted by SinTech goons? During gameplay, hit ~ to lower the console, then type: **/superfuzz** (god mode), **/health 999** (999 health), or **/wuss** (all weapons). Or, just for fun, try **/wallflower** (no target) or **/nocollision** (no clipping). Huh huh... schooled ya.



10 GREAT DEMOS

Demos:

- Game, Net & Match!
- Jagged Alliance 2
- Liberation Day
- Microsoft Baseball 3D 1998
- Microsoft Golf 1998
- People's General
- SiN
- Starcraft
- Vangers
- Warlords III: Darklords Rising

Patches:

- Descent: Freespace v. 1.03.01
- HardBall 6 v. 6.02
- M.A.X. 2 v. 1.3
- Might & Magic VI v. 1.1
- The Operational Art of War v. 1.02
- Total Annihilation v. 3.1

Other:

- Exclusive! Heavy Gear II .AVI, plus concept art and screens
- Interstate '82 .AVI, concept art, and screens
- GameSpy 3D v. 2.02, plus SiN support

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If you've ever wished Games.net offered more in-depth console coverage, take heart. Fellow IDG pub *GamePro* has climbed aboard to regale us with plenty of news, previews, reviews, and more on games for the Nintendo 64, PlayStation, Saturn, and arcades. Console mania awaits!

DOWNLOADABLE MOVIES

We're adding a new section to the Downloads area of Games.net. Along with the demos and

patches, you'll soon find a movies section with the latest video clips of Duke Nukem Forever, SiN, Heavy Gear II, and other upcoming games.

SWAT 2 TACTICS

Stuck on Sierra's SWAT 2? No problem. We've gone through every ounce of this game to provide you with a complete strategy guide. Now when you're stuck at the bank with a terrorist pointing a gun at your head, you'll know what to do.

SiN SERVER

This month's SiN demo offers some awesome deathmatching, and our Web crew's given you a perfect battleground. While in the game, dial into the *PC Games* SiN server at **sin.pcgames.com** or **209.155.74.207** for a little online mayhem. (If you don't have this month's CD, you can download the demo from **www.pcgames.com/download/files/0,1129,722,00.html**.) Oh, and remember, if you're still playing Quake II (we sure are), there's always our Quake II server at **quake.idg-games.com**.

AND THAT'S NOT ALL!

A huge deal has just been finalized with Excite! Games.net will now be featured in Excite's Games Channel as the premier con-

tent provider covering gaming software/hardware for both consoles and PCs. And don't forget all the regular features we've got on PC Games.com like the Screenshot of the Day and Web Site of the Day, plus the ongoing Mod Files series, where we look at the best new game-mods. It's all at **www.pcgames.com**!

DEMOS

- Armor Command
- Final Fantasy VII
- Independence War
- Jetfighter: Full Burn
- Microsoft Baseball 3D
- Panzer Commander
- Plane Crazy
- Sanctum 702
- SiN
- Spearhead (exclusive!)
- SWAT 2
- Total Annihilation: Battle Tactics
- WarGames

PATCHES

- Panzer Commander v. 1.1
- Descent: Freespace v. 1.03.01
- Battlezone v. 1.31
- Jetfighter III Update #3
- M.A.X. 2 v. 1.3
- Motorhead v. 1.3
- Unreal v. 1.01

PREVIEWS

- Age of Empires II
- Bio F.R.E.A.K.S.
- Blitz
- Gabriel Knight III
- Global Domination
- MicroMachines V3
- Skies
- Spearhead
- Starsiege: Tribes
- TA: Kingdoms
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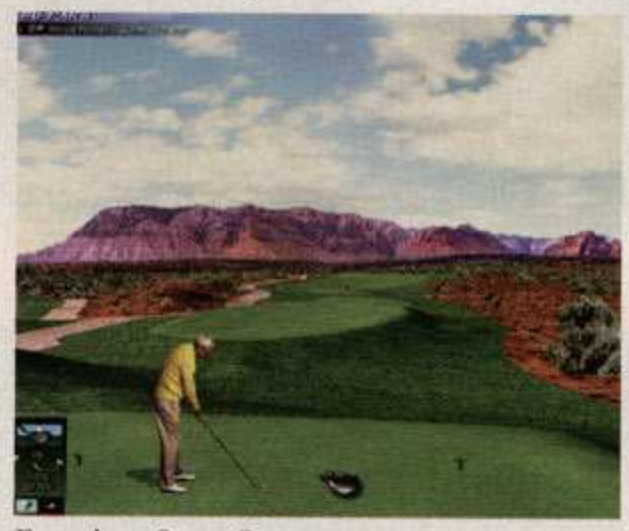

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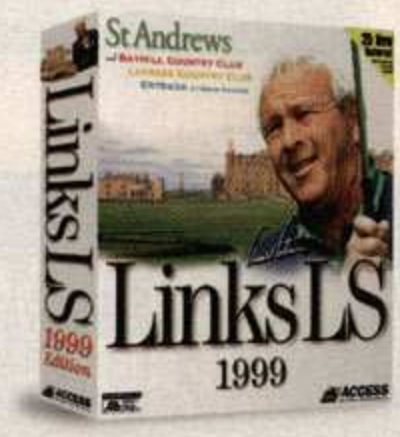

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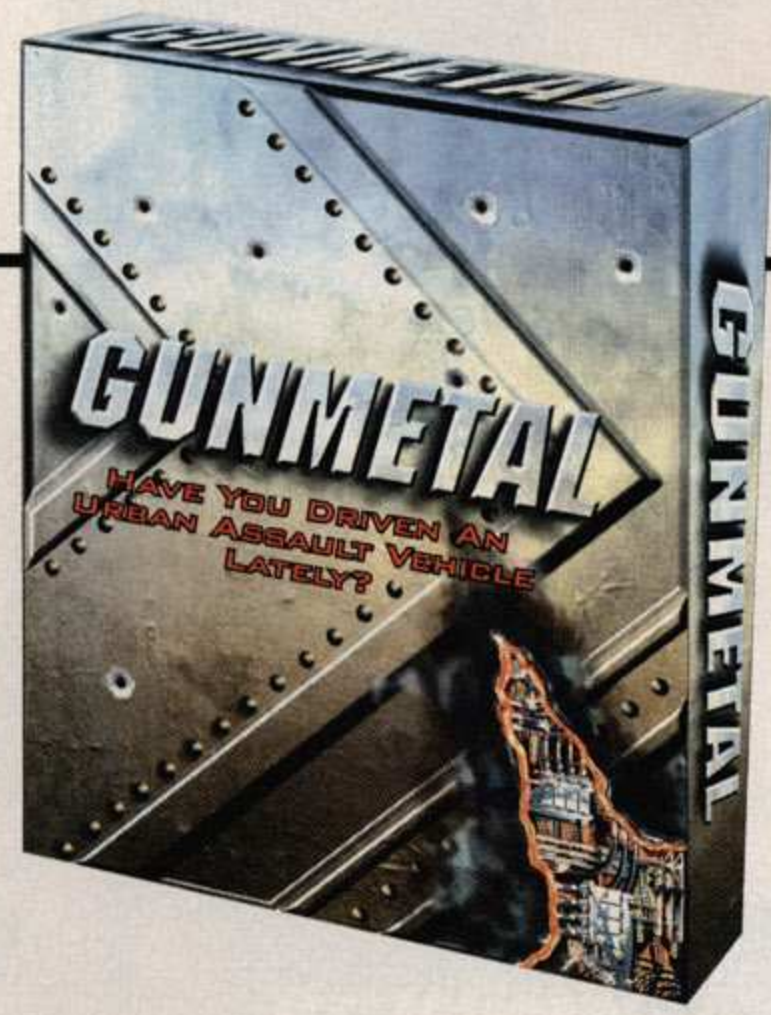

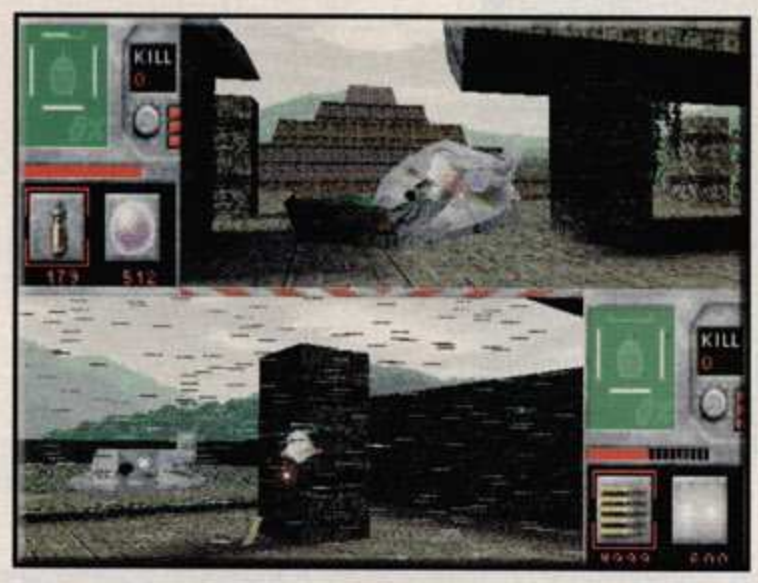

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INCOMING!

Question of the Month: Developer Worship?

With .plan files plus media and Internet overexposure, many top game-developers—John Romero, Sid Meier, John Carmack—are now treated like movie or sports stars, with their every move and utterance scrutinized. Just as some people will go to any movie their favorite star is in, would you buy a game from your favorite developer or company just to see what textures they're using and how it's playing? Is there anyone you respect so much that you'd buy their game just because they made it? Who *is* the Michael Jordan of game development? Send your riffs to *pcgamesletters@pcgames.com* or PC Games, 501 2nd Street, Ste. 500, San Francisco, CA 94107. One randomly chosen letter-writer wins a free game and a *PC Games* T-shirt.

*[Editors' note: We got tons of mail from you spouting vitriol and praise in response to The Player's anti–Deer Hunter column. Short ones ranged from "Deer Hunter rules, jackass!" to "Right on!" Others pointed out The Player's obvious inexperience with deer hunting, which may have colored his opinion. Jeremy Wells wrote, "If you go traipsing around the woods, you aren't going to see anything, ever." One disgruntled reader even blasted the column on his Web site (***www.fortunecity.com/skyscraper/century/292/dh_dex.htm****, below), inciting visitors to barrage The Player with angry email. Here are some of the best retorts, followed by The Player's response.]*

The Hunt Is On

I was the lead programmer for Trophy Bass and director/lead programmer for Trophy Rivers, and I'm currently directing two new fishing products. The truth is that even companies like Sierra and Dynamix (all under Cendant now) are suffering from the Deer Hunter saga. The top management sees a game that is inexpensive to make do extremely well in the marketplace, and they all want to do the same.

Fighting that urge has been difficult even for people who have been in the business for a while. Of course, a lot of us here feel that our Trophy series allowed Deer Hunter to do what it did, but it probably would've done fairly well anyway. The original Trophy Bass (not TB2) has sold over 750,000 copies, but 500,000 of those were at below $10. Look how much more game you get for half the price! :-) Please keep up the good work and remind EVERYONE that quality games are worth more.

Steve Letsom, via email

I read with interest your piece about the inexplicable success of Deer Hunter. While I suppose that Deer Hunter is less destructive than really blasting some hapless woodland creature with a high-powered rifle, the truth is that it may actually be one of the single most ridiculous pieces of software anybody's tried to make money off of. Apart from the fact that the programmers of this little gem have all the talent of a blowfish, I am appalled at the very notion of what they are trying to achieve: virtual tedium. But with this in mind, here are some ideas for games that would appeal to those in the gaming public who, apparently, don't have enough real boredom in their daily lives:

Coin Toss: Learn about the science of probabilities as you try to guess if the simulated coin will come up heads or tails. Go head-to-head against the computer or a human opponent in network play (3D card required).

Virtual Luge: Strap your character into the sled, push the button, and watch him hurtle down the mountain in this breathtaking re-creation of the only sport in which dead people can participate.

Pot Watcher: White-knuckle excitement as you try to keep your character's attention focused on the 3D-rendered stove. Try to prove the old adage "a watched pot never boils."

SimTree: Help your electronic woody arborescent grow from tiny acorn to mighty oak in this real-time simulation.

Super Couch Potato: Play this network game against other pathetic losers to see who can become the flabbiest by doing as little as possible for hours on end. (Extra points for heart attacks caused by the strain of reaching for the remote.)

Glacier Keeper: Experience all the heart-stopping excitement of the ice age! Create your own glacier, then watch its relentless movement down the mountain in this turn-based strategy game.

Hermit: The Game: Keep yourself locked in your simulated house as you try to avoid any kind of human contact in this cutting-edge RPG.

This ought to keep the clone-makers busy for years to come. Now if we could just do the same for the players... Aw, screw 'em.

Carl Dean Cox, via email

Odds of landing this move: 10 to 1.

Odds of fathering children afterwards: 1,000,000 to 1.

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INCOMING!

Deer Hunter's the only game where all three generations of my family gather around the computer and play together. Somehow, I think that's a far more profound statement than any that could've been made by any of the "innovative games" you would've preferred I purchase instead. Deer Hunter's worth far more than the $20 I spent on it.
Jim Anderson, via email

Your portrayal of those who purchase Deer Hunter specifically and outdoors games in general as "dupes" is nothing less than arrogant and misleading. Whether the game was purchased at Wal-Mart, CompUSA, Best Buy or any other outlet, to refer to people that way is out of line! Your article did nothing except portray you as elitist and ignorant.

It is because of people like you that I developed The Virtual Outdoorsman Page (**www.warlord.com/~amie/main.html**) to give those interested in outdoors games reliable information and reviews composed by people who actually hunt and fish—not by someone who sits in his parents' basement playing Quake II, has never seen a deer outside of *Bambi*, or put a worm on a hook. I actively hunt and fish in my spare time and find Deer Hunter remarkably realistic, well-programmed, and enjoyable to play. It's a great game for what it simulates: deer hunting, not zapping mutants or zombies with a plasma rifle. Frankly, it takes more skill to track and shoot a whitetail in DH than it does to play through a level of Quake or Doom.

Whatever your problem is concerning these games (and those who play them), maybe you need to take a step back and be...objective? While I read that those who purchased DH at Wal-Mart were "duped" by GT Interactive's marketing, I didn't hear a peep about all those people equally duped into purchasing Tomb Raider, Starcraft, or X-Wing vs. TIE Fighter at Wal-Mart. Are the people who read your "objective" reviews and comments "dupes" for purchasing games on your recommendation? Mr. Klett, please stick to what you know best: sci-fi and fantasy games. Leave the reviews of outdoor sims to the experts who know what they are talking about.
Steven Ellis, via email

Actually, I'm an avid outdoorsman and fisherman, and Trophy Bass is one of my favorite games (which I stated). I'm not against hunting games—just bad ones. I'm looking forward to playing Sierra's Trophy Buck when it comes out. If it's anything like Trophy Bass, I suspect DH fans such as yourself will see what you've been missing. Oh, and I moved out of my parents' basement last week...

—The Player

The Greatest Games of All Time?

The votes are in and... Huh? According to your readers, gamers, developers, and editors, the gaming industry should abandon development of just about everything but first-person shooters and real-time strategy games. In the top 10, Civ and Civ II are the only games that don't fall into these categories. If this is any indication of things to come, please stop the ride, because I want off.
Cris Snyder, via email

I was immensely disappointed to see that you voted Total Annihilation as the best game ever. You mentioned the survey was done by 10,000 people, but I find this hard to believe, unless these people were the staff of *PC Games*, game publishers, Cavedog Entertainment, and all your families and friends. I've talked to many fellow gamers, and they say that TA didn't even deserve to be in the top 100!

It may have fast gameplay with good graphics, but it's still a clone. The only things that make it stand out a bit are the number of units and good hills and explosions.

I have been playing PC games and wargames since 1986. I personally believe that no game newer than late 1996 should've made your list. It doesn't matter what's cool right now: It's the old classics like Doom, Syndicate, Alone in the Dark, TIE Fighter, Zork, SimCity, Wolfenstein 3D, and Ultima IV that should have come in first.

I hope you get plenty of other complaints about this. You owe gamers an apology for trying to boost a game that doesn't deserve more than a Strategy Game of the Year award.
The Jackal, via email

Our editors were surprised to see TA win the Greatest Game of All Time balloting, and we tried to reflect that in the write-up. While we do think TA is great, we agree that many of the games you mention are more deserving of the honor for their innovation, gameplay, or historic place in our industry. But understand, it was the readers' vote—not a survey—and as much as we wanted to change some of the results, we didn't. Suffice it to say that a greatest-games list from the PC Games *staff would've been much, much different. And that's cool that the fellow gamers you polled would've selected something else: Let's hope you all vote if we ever do a similar feature.* *—Eds.*

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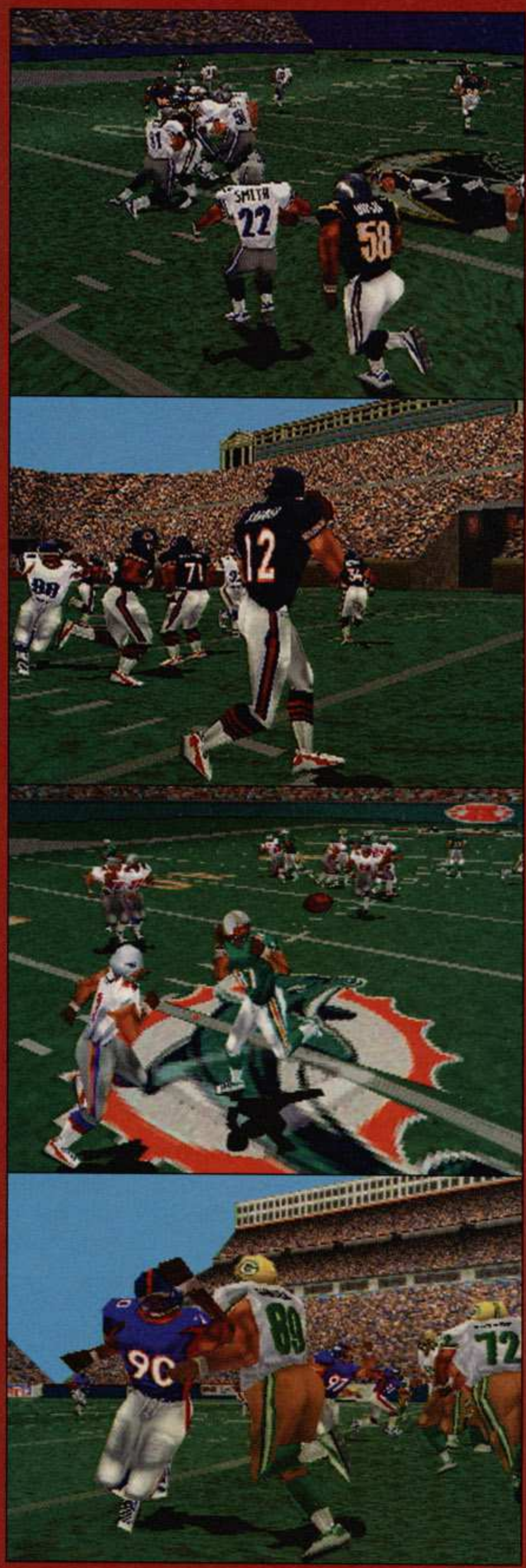

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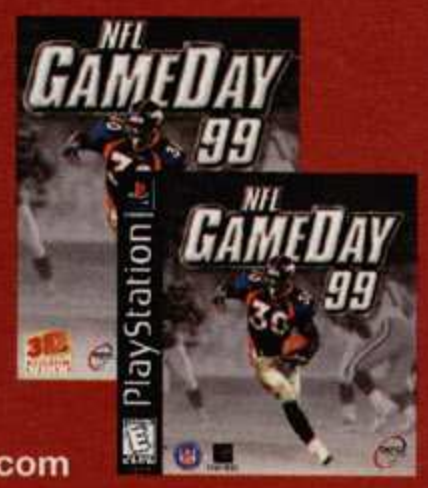

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Raven Goes to the Dogs...of War

By George T. Chronis

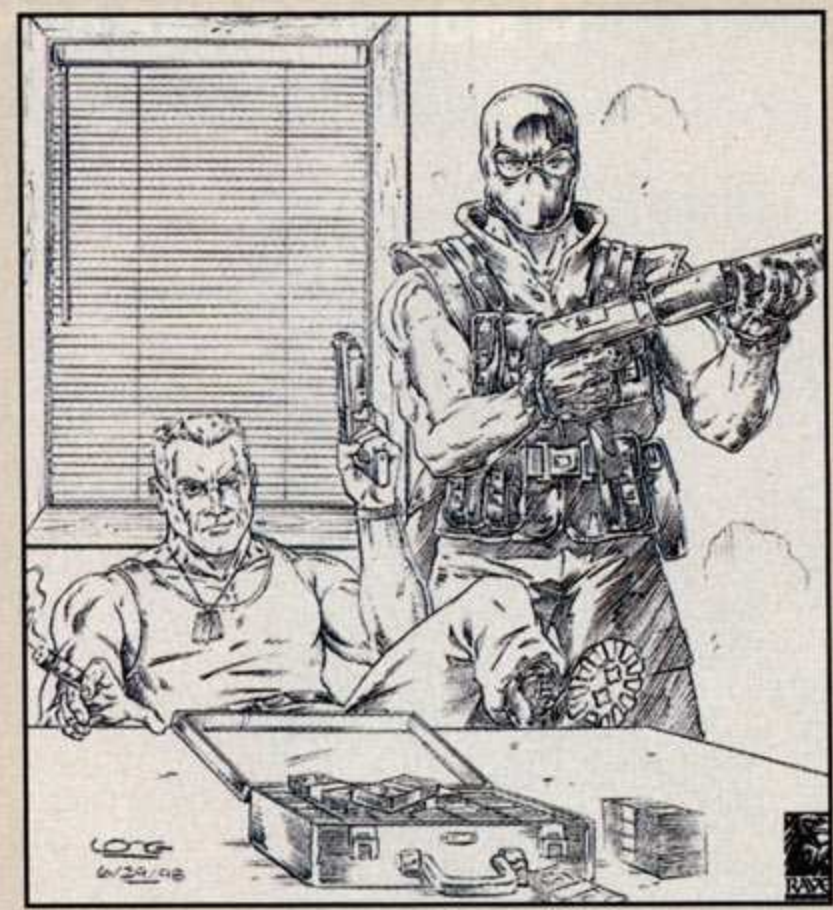
The designers at Raven aren't the tragically hip, overtly cutting-edge posers that some game magazines like to champion. Hell, most of them are married and live in Wisconsin, of all places. But what the people at Raven all have in common is that they love games—making and playing them. They've brought us some first-person gems like Heretic, Hexen, and Hexen II. Soon we'll be trying out Heretic II, their take on third-person adventure.

Although you may have missed Take No Prisoners, the top-down–view shooter that Raven did for Red Orb, it's obvious that this modern-day mercenary break from Raven's fantasy tradition got the troops thinking. Raven's come up with a new first-person actioner called Soldier of Fortune.

That title wasn't taken lightly. Raven is working very closely with the mercenary magazine of the same name, developing the game under a direct license. While the lore and lure of Foreign Legion duty doesn't carry the mystique it once did, and a lot of pundits will chirp in to say *Soldier of Fortune* isn't politically correct, Raven couldn't care less. Soldier of Fortune is a game they *want* to make.

Using the Quake II engine—or Quake 2.6, as they call it—Raven is concentrating on a very strong single-player game. Players will peruse a "Hot Spot" Web site feature within the game to scan for possible jobs. They'll find employment opportunities for both good and nefarious causes. Project administrator Dan Freed says the missions will be taken from current events—everything from the violence in Bosnia to gang fights in New York City. The type of jobs you take will affect future offers: Work for too many authoritarian dictators or mob bosses, and the offers that come to you later will branch further in that direction. The same goes if you work with freedom fighters from the start.

Raven is striving to up the realism ante with Soldier, focusing first on the weapons. Like Remedy is doing with Max Payne, Raven is modeling real weapons of today, which will recoil in proportion to the amount of lead they spew forth. Freed says at least 85 percent of the weapons will be from real-world armories. Players will have to reload magazines and suffer the time it takes to cock the bolt on a new mag. They'll also take real damage that'll impede movement and dexterity, depending on where and how many times they're hit. "You can't just walk away," Freed says.



Raven's next action game pays homage to mercenaries.

Although Raven may have to dial down the realism a bit for multiplay, Freed says players will still have to adjust to a less brazen approach to deathmatching. "We're not sure how much of the realistic damage to put into the deathmatch levels," he says. "It will have to be fun, so we may put in a switch to turn off the damage if players want that." Another variable to go along with realistic damage in DM is choice of body-type. In addition to male and female options, size and bulk choices will be available—these will affect movement-speed and damage-resistance.

Freed says all single-player levels will be available for multiplay in addition to a number of DM-only levels. There will also be a lot of single-player and multiplayer exterior levels, despite the Quake II engine's predilection for interior scenery. Capture the Flag and other cooperative scenarios can be expected as well. Since Soldier of Fortune won't be released until next summer, Raven has a lot of time to add and subtract features.

One of the missions will take place in a run-down section of New York City.

Raven is feverishly adding new adversaries to Heretic II...

Heretic II Update

While *PC Games* was learning more about Soldier of Fortune, we were surprised to learn there were some major changes in Raven's Heretic II since we last looked in on the game (July/August). The biggest development is an entirely new AI system for monsters and NPCs.

"We made a major design change because we weren't happy with the way the monsters reacted to you in single-player mode," says Freed. "We set up new buoys for the AI so that monsters can better navigate levels. Now adversaries can go up elevators and follow and harass you anywhere on a level. They'll no longer be penned up in a particular room or section of a level where they were placed originally by the designer."

You won't face the same set of enemies over and over, though. Freed says Heretic II will have a huge variety of adversaries—but won't state a number. What's more, with a few exceptions, when players leave a particular region in the game world, they'll leave one set of monsters behind for a new set in the next region.

...including a giant Locust.

In the multiplayer realm, Freed says, some of the DM levels are already up and running. Expect somewhere between four and six deathmatch arenas to complement the 22 single-player levels when Heretic II ships next month. What Raven's learned so far is that multiplayer matches are a much different experience in third-person games than in Quake II.

"They're more fast-paced and take more thinking," Freed says. "The character movement really surprised us and the control was much more intuitive than we thought."

One multiplayer issue Raven had to resolve was how to minimize the effect casting spells might have on Internet lag. Although TCP/IP gameplay is still being tested, Freed says all spell (and most special) effects have been moved to each player's client PC to reduce lag while keeping Heretic II's fantastical weaponry fun to use.

Heretic II will support H3D vision glasses and Aureal's A3D, and it'll have built-in support for Voodoo, Vérité, Rage, and I740 boards. Time permitting, Raven will add special Voodoo II features such as extra textures before Heretic II ships in November.

First Look: SideWinder Force-Feedback Wheel

We've been excited about Microsoft's SideWinder Force-Feedback Wheel since we saw a pre-production model earlier this year. We recently got our hot little hands on one, complete with beta drivers, so we took it for an extended test-drive.

The wheel itself is solidly constructed with a big fat grip that's comfortable to grab. Its diameter is small, which makes for quick turns, plus it doesn't take up too much desk space. Initially I was disappointed by the lack of a shifter, but then I experienced the joy of the "flippers" on the underside of the wheel. This is a better solution to shifting because I never had to take my hands off the wheel. The all-plastic pedals were substantially lighter than other pedals I've tried, but they still seemed solid enough. The wheel housing wasn't as heavy as I'd expected, considering it had a motor inside—a strong motor, I soon found out.

Booting up Monster Truck Madness 2, I was treated to the sensations of driving on gravel roads, running over cows, and smashing into fences. But I really wanted to try out the FF, so I deviated from course and headed over to the train tracks. You can feel every railroad tie! The faster you go, the more the wheel makes the appropriate adjustments, and soon I was holding on for dear life, my pens and pencils rattling on—then off—my desk.

System requirements are slated for a P90 with 16MB of RAM, 15MB HD space, and a Sound Blaster–compatible card with a MIDI game-port running Win 95 or later. The SideWinder is supposed to hit stores by November for under $200. Driving games using existing force-feedback driver protocols will be compatible, but the jury's still out on how Microsoft's new wheel will deal with Immersion's latest drivers, which will be supported by FF wheels from Logitech and ThrustMaster. When we get retail drivers for the SideWinder wheel, we'll let you know how it does.

—Danny W. Lam

GAME WIRE

Covert Ops

Microsoft Gets Gas Powered

Chris Taylor, the Total Annihilation producer who left Cavedog to form Gas Powered Games, has signed a two-game distribution deal with Microsoft. Gas Powered's first game (to be released in spring 2000) will be an RPG, a departure for the veteran game-designer. While Taylor was reluctant to provide details, he did say the minimum specs will be a PII 400 with 128MB of RAM.

"With those specs, we're going to push in areas that haven't typically seen a lot of attention [in the RPG genre]," Taylor says. "Physics, the level of detail, and high-end rendering are all things we're looking at, but technology isn't the focus of the game. Other areas of focus include the story, characters, and overall flow of the entire world."

There'll be a "huge multiplayer component," he adds.

Gas Powered teams up industry vets from Cavedog, Radical Entertainment, WizBang Software (Microsoft Baseball 3D), and Red Orb. The group is currently building tools, editors, and low-level libraries, Taylor says, with work on the art to begin shortly. Taylor says he knows gamers will ask "Why Microsoft?" He cites the publisher's clout in the retail market, its proximity to Gas Powered's Kirkland, Washington, offices, and its commitment to publishing great games.

"They're not all suits and stock market," Taylor says. "It wasn't just all about the money—it was 'How are we going to make a great game?'"

Air Combat for the Masses

Deer Hunter's wild success has grabbed the attention of publishers who smell increased market share via simple, low-cost games. That's why Origin, home of Jane's combat flight-sims, is prepping Fighter Pilot for take-off. "It's a game, not a sim," says Origin VP of marketing Alex Carloss. In fact, it's a game that goes out of its way to strip away the intense detail and dozens of arcane control features synonymous with sims.

Believing that there are a whole lot of people out there without throttles and fancy joysticks, Carloss says it's critical for publishers to have a broader spectrum of products. The game will be a chase-view, jet-combat actioner packed full of Hollywood moments. Carloss says explosions will be four times larger than in a flight sim, and enemy jets will appear much larger than the black dots fighter-sim aces are familiar with. There won't be a realistic cockpit view, either. Pilots will get some onscreen windows—one showing enemy jets targeted, the other a missile camera-angle showing what's being attacked. In keeping with its populist roots, Fighter Pilot will require a P166, support Direct3D accelerators, and cost only $19.95 when it ships this fall.

We don't need no stinkin' high-priced joystick.

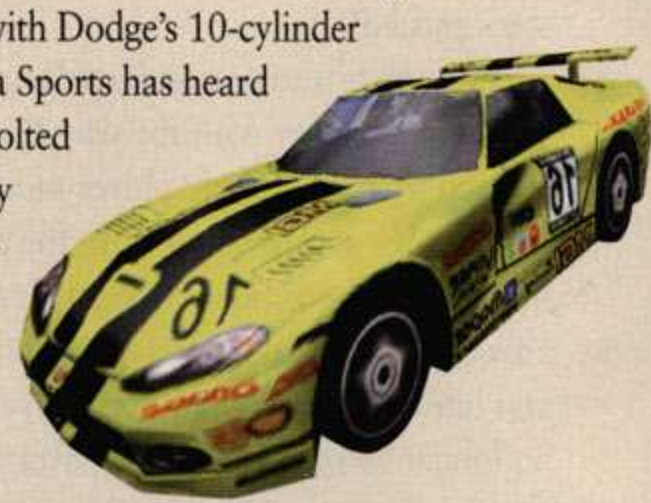
3D Realms Punts Glide

Whoa! 3D Realms is doing it again. Last month it pulled the Quake II engine out from under Duke Nukem Forever; now the company has opted to wipe all its Glide-based development on Prey. The game was originally to use OpenGL as the main graphics handler, with D3D support thrown in as well. Prey project leader Paul Schuytema said they scrapped OpenGL development because of Microsoft's enhancements in DirectX 6.0, the ease of working with one API, better performance on K6 2 CPUs, and access to every 3D accelerator that supports DirectX.

Prey will reflect in Direct3D only.

Viper Fever

For all you GT racers out there pining to hit the pavement with Dodge's 10-cylinder Viper, Sierra Sports has heard your call. Bolted together by MGI, a studio formed by a number of Papyrus alums, the upcoming Viper Racing is less sim and more action than you might expect. Each Viper is made up of about 1,000 polygons, which means damage taken can be shown and simulated with accuracy. The suspension has also been accurately modeled, and the game even factors in tire deformation. True, you can turn on pretty accurate and unforgiving damage and handling modes, but you can also turn off realism. Players will be able to race in an in-game Viper league starting off with a stock car. By winning races, drivers will earn the cash to upgrade their vehicles' engines and suspension to grand-touring status. Multiplay will be LAN-only for up to eight drivers. And for those of you who like to blaze your own trails, Viper Racing lets you go anywhere you can see; just don't whine when you find yourself stuck in a lake. The game should debut sometime in November.



Viper Racing is gunning for ya.

—George T. Chronis, Willem Knibbe, and Don St. John

Honor

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GAME WIRE

At the Wire

Fugitives Escape Blizzard

Starcraft producer James Phinney and a squad of 10 coworkers have resigned their positions to form a new development studio called Fugitive. Blizzard says the defections will not delay Starcraft: Brood War, the add-on Phinney was working on. Not much is known about Fugitive, but speculation at press time is that a management-team announcement is close to being released.

Starcraft breeds faster than wabbits.

A Million Zerg and Climbing

Speaking of Blizzard, they've done it again. Starcraft is the third of the developer's games to sell more than 1 million units, following Warcraft II and Diablo. After three months, Starcraft has had the fastest-selling launch of any game distributed by Cendant (the parent company that owns Sierra On-Line and Blizzard). Starcraft sales were reported by research firm PC Data.

New TA Unit Factory

There's been a lot of grumbling in the Total Annihilation community since Cavedog stopped releasing new units on a weekly basis. It still does, on occasion: four are included with the new Battle Tactics add-on (see review in this issue), but that's not enough for TA junkies. To fill the void, an independent group of developers joined together as the Total Annihilation Design Division at **tadd.annihilated.org/mainframe.html**. Although Cavedog promised dead-unit resurrection bots for the Core Contingency package, it took TADD to actually release them. TADD's units look and work as well as Cavedog's, with none of the bugs or imbalance seen in most fan units.

Acclaim to Kill Kenny!

Acclaim is working on not one but two *South Park* games. The first, which doesn't even have a working title yet, should be out around Christmas. Being developed by Iguana and using the Turok 2 engine, it looks to be a funny take on the first-person shooter genre—weapons under discussion include a chicken that, when its neck is pulled, fires eggs. Dodgeballs will likely appear, as will a catapult that launches cows. The second game, an adventure with the working title A Week in South Park, is being developed by DreamForge and should be out in June 1999. You'll use each *South Park* character's unique abilities to solve a variety of humorous puzzles—up to 25 per level. Both games will incorporate *South Park* voice samples.

Fighter Double

To help bring more fighter jocks to its new free online-game service NovaWorld, NovaLogic is offering a two-for-one deal on F-16 Multirole Fighter and MiG-29 Fulcrum. Gamers can play with either combat flight-sim in the same multiplayer match, and NovaLogic says as many as 100 people can fly against each other simultaneously on NovaWorld. The $39.95 two-fer package should be available in stores by the time you read this.

—George T. Chronis and Willem Knibbe

Sid Meier's Alpha Centauri *The next Civ?*

It won't say Civilization on the box, but Sid Meier's Alpha Centauri (SMAC) will be the one true sequel to Civ II. After getting a chance to play a stable build, here's what we can tell you about this much-anticipated turn-based strategy game.

Civ II's colony ship has crashed on Alpha Centauri. Each of seven squabbling leaders—with very different governmental philosophies—is bent on ultimately implementing their own vision of future colonization, exploration, research, and war.

There's a lot more going on in Alpha Centauri's map view than in Civ II's.

In SMAC, nearly two-dozen factors govern the way each faction relates to the world at large; and if you're not satisfied, you can create your own faction with positive and negative attributes.

Each faction leader also begins the game more or less inclined to cooperate with various opponents. Given considerable effort, it's even possible to achieve a "pact brotherhood" with computerized AI and win the game in tandem by eliminating opponents or reaching a higher evolutionary stage.

There's much more opportunity for diplomacy and trade in SMAC. You can choose to barter advancements, energy, battle units, map knowledge, whole colonies, or territorial sections. You can coordinate assaults on third parties, too, choosing a target city and time to attack.

Of course, research is imperative, with four paths: exploration, pure knowledge, wealth/infrastructure, and military. You'll also be able to design your own combat units for air, land, and sea battles, with a futuristic mix of offensive and defensive systems.

Much of SMAC can be automated. You can create queues for construction, tell individual military units to patrol, explore, attack, or build roads, and establish AI-driven "governors" (optimized for research, infrastructure, exploration, or combat) in any colony.

Alpha Centauri's looking like a keeper for Civ II fans. *—Barry Brenesal*

Vengeance

www.cavedog.com

BOOKMARK THIS

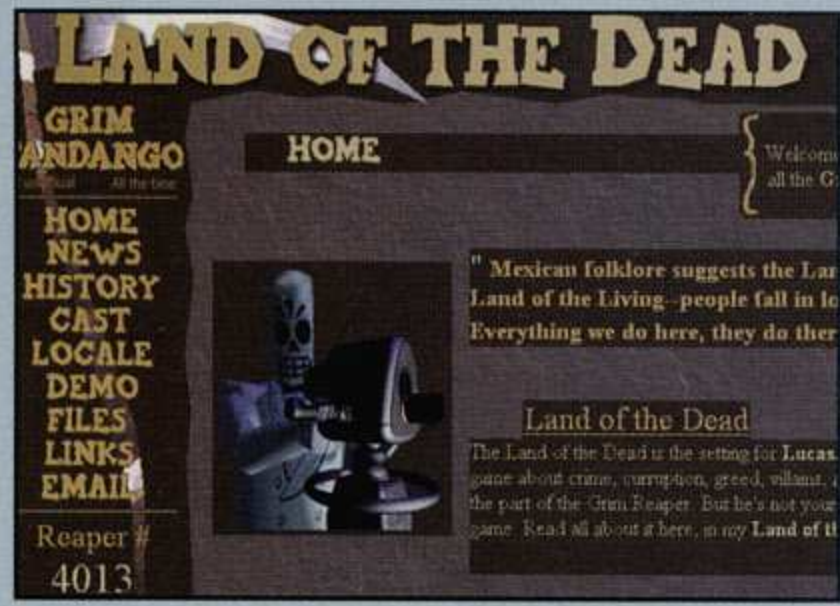
The Web's full of sites devoted to the gaming greats. Here are some of our favorite in-your-face URLs we bookmarked this month. If you visit or run a site that deserves mention, drop us a line at *sites@pcgames.com*.

By Danny W. Lam

Site of the Month: Land of the Dead

www.mixnmojo.com/fandango

A beautifully designed, aptly named site dedicated to LucasArts' Grim Fandango. Land's got the latest info on the game—its locales, history, and cast, and files, demos, and other downloads, all in a creative layout. Be one of the Reapers to visit this site (I was number 4,013), and don't forget to download the "Dango" font. Kudos to our October Site of the Month!



Baseball Sim Central

www.baseballsimcentral.com/

Need highlights from all your favorite baseball sims? Check out Baseball Sim Central. It's got cheats, files, and the baseball-sim awards. A home run for diehard fans of HardBall 6, Triple Play 99, and Microsoft Baseball 3D.

WebRing's Game Web ring

www.webring.org/ringworld/comp/games.html

RingWorld's Game Web ring is an excellent list of about a bajillion Web rings that relate to anything and everything in the gaming world—from specific games like Final Fantasy VII to clans and guilds to genre-based rings. There's also a good search engine on WebRing's home page (**www.webring.org**).

Crossroads of Norrath

con.crossroadsrpg.com/

A good site for tracking the developments in the EverQuest community. This site has frequently updated news, six message boards, a library of all the stuff that's been written about EverQuest, and some interesting polls.

The First-Ever Dune 2000 Site

www.ww-underground.com/games/dune

While we can't verify what the name states, we do know it's a great site on this forthcoming remake. Plenty of fan art and screenshots, plus contest info, news, and the skinny on structures, units, and Houses. It's all very nicely put together—though this is the first time we've seen so many w's in one URL.

Duke4.com

www.duke4.com

Another stompin' preview site—and hell, it's for Duke Forever, so all the better. Get the full scoop on The Man's next adventure, with a description of the game, progress updates, developer interviews, fingers, and links to other DNF sites. Mmm...it's looking good.

TiberiumSun.com

www.tiberiumsun.com/

OK, folks—ignore the misspelling of this much-anticipated RTS game and concentrate on the stuff the site offers: screens, a game FAQ, info on units and buildings, a history of Westwood, and loads more.

Tom's Hardware Guide

www.tomshardware.com

One of the most complete hardware guides around. Looking for a new motherboard? Can't tell the difference between BIOS and RAM? Want the scoop on over-clocking? Tom's got the details.

Mandate Mania

onramp.uscom.com/~potts/mm6/index.html

Just goes to show that you don't need to be fancy-looking to be a great site. This one, by *PC Games* reader Mike Potts, is one of the most comprehensive Might and Magic VI sites we've visited, with everything from lists of spells, skills, and potions to Easter eggs, clues, travel schedules, and maps of different towns and dungeons. It's huge!

Online-Gaming Services

MPG-NET	*www.mpgn.com*
ENGAGE	*www.gamesonline.com*
TEN	*www.ten.net*
Internet Gaming Zone	*www.zone.com*
GameStorm	*www.gamestorm.com*
DWANGO	*www.dwango.com*
HEAT	*www.heat.net*
Mplayer	*www.mplayer.com*
WorldPlay	*AOL keyword: WorldPlay*
2AM	*www.2am.com*
KALI	*www.kali.com*
KAHN	*www.stargatenetworks.com*
Battle.net	*www.battle.net*
Bungie.net	*www.bungie.net*
Simultronics	*www.play.net*

Hope

www.cavedog.com

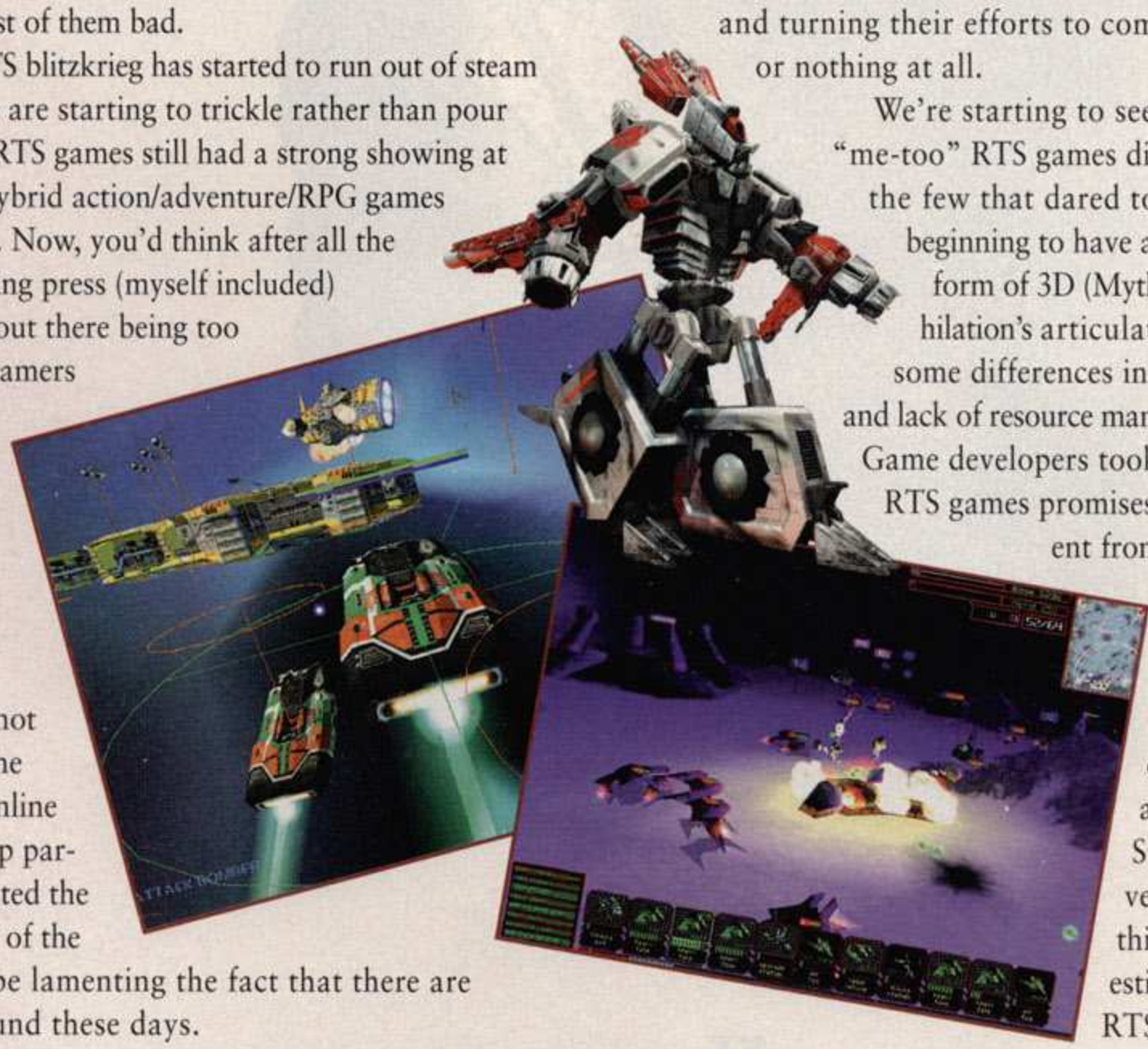
STEVE KLETT

The RTS genre isn't dead—in fact, it may have the most opportunity left for innovation.

Game Genres Never Die

It seems like only yesterday all us gamers were screaming about the ridiculous number of real-time strategy games flooding the market. After Command & Conquer and Warcraft sales skyrocketed, the rest of the industry clamored to jump on the bandwagon. In '96 and '97, RTS games stole the limelight at the Electronic Entertainment Expo—everywhere you looked there were C&C or Warcraft clones, most of them bad.

Well, now the RTS blitzkrieg has started to run out of steam a bit, and new titles are starting to trickle rather than pour onto store shelves. RTS games still had a strong showing at this year's E^3, but hybrid action/adventure/RPG games stole the mindshare. Now, you'd think after all the whining in the gaming press (myself included) and newsgroups about there being too many RTS games, gamers would stand up and breathe a collective sigh of relief—and take the opportunity to try out a new genre or two.



Strangely, that's not the case. Many of the same game mags, online sites, and newsgroup participants that lamented the reproductive power of the RTS now seem to be lamenting the fact that there are fewer of them around these days.

Step back for a moment. It wasn't that long ago we were saying that the birth of the RTS game would kill off the turn-based strategy game. Now new turn-based games such as The Operational Art of War (see review this issue), Over the Reich, and Panzer General II, and upcoming games like Civilization: Call to Power, Jagged Alliance 2, and Alpha Centauri have many convinced that the Apocalypse is imminent for the RTS. Silly, isn't it?

Well, you know we gamers aren't happy unless we've got something to complain about (and that goes double for us game journalists). But RTS games and the genre are far from dead. In fact, I believe the RTS genre may have the most room for innovation.

The winners of the classic RTS wars are clearly Westwood and Blizzard—each keeps proving it can vary its gaming recipes only slightly and be assured we'll come back for more. Starcraft's success is the strongest example. It's an excellent, well-designed game, but at its core it's really not all that different from Warcraft. And Tiberian Sun will be great fun, but I'll bet it's not going to represent an innovative leapfrog over its predecessors.

And this is OK because these are good, fun, quality franchises. It's just that we don't need 30 more games exactly like them. Now, finally, it seems many developers are getting the message and turning their efforts to coming up with something new, or nothing at all.

We're starting to see the evidence. As most of the "me-too" RTS games die anonymously on the shelves, the few that dared to try something different are beginning to have an impact. This is mainly in the form of 3D (Myth's rotatable map and Total Annihilation's articulated 3D units) combined with some differences in gameplay (Myth's formations and lack of resource management, and TA's Commander). Game developers took notice, and the next wave of RTS games promises to be something totally different from the last.

This Christmas, you'll start seeing some twists on RTS gaming that hopefully will deliver a new playing experience. A loud buzz is already building around Sierra Studio's Homeworld for this very reason (see the preview in this issue). And it'll be very interesting to see what the early 3D RTS experimenters—3DO with Uprising, Bungie with Myth: The Fallen Lords, Ripcord with Armor Command, Activision with Battlezone, and Cavedog with TA—come up with the second time around.

Keep in mind, the RPG and flight-sim genres have been labeled dead-in-the-water many times, and look at them now. Fallout, Might and Magic VI, and Ultima Online (love it or hate it) have revitalized RPGs, and more great ones are on the way (see last month's cover feature). The number of flight sims shipped over the last year—and of new WWII flight sims in development—is staggering. Every game genre hits a creative wall sooner or later, then eventually climbs over it. So, too, will the RTS.

What new RTS game are you most looking forward to? Can a game genre die? Let me know at The_Player@msn.com.

Terror

www.cavedog.com

THEWEASEL

Maps, mods, missions, and more

Spying on Success

You've used GameSpy 3D, right? It seems everyone and their brother—1.3 million people, according to GameSpy sources—have downloaded and booted up the handy server browser.

GameSpy simplifies finding online-game servers—it downloads server lists from the Web, then pings the servers to return such information as who's playing there, your ping, what mods are running, etc. GameSpy will be bundled with or incorporated into a number of the hottest games next year. And it's shareware—as in, it's free.

It's also one of those "local boy makes good" stories that Internet gaming's made possible. We all know about Steven Polge designing the Quake Reaper Bot before getting hired by Epic to do Unreal's AI, and Steve Bond and John Guthrie doing a bunch of Quake mods before getting hired by Valve to work on Half-Life. So who's the guy behind GameSpy?

Flash back to the heady days of Quake's initial release. Remember the excitement as id's client/server architecture allowed anyone to create dedicated Quake servers? It was the dawning of a new age for online gaming—with one rub. "Finding servers could be a hassle," says Joe Powell, a Florida-based database applications programmer for the Navy. "I thought, 'Damn, I want to quit writing down all these IP addresses and automate this thing so I can quit wasting my time.'"

Partly as an experiment to learn C++ and Windows programming, but mostly so they could start fragging, Powell and friend Tim Cook whipped up a freeware utility that automatically downloaded server lists and then pinged the servers. Powell dubbed it QSpy and sent it to a few Quake sites, wondering if it would even be well received.

Meanwhile, in California, Mark Surfas had just created PlanetQuake, a collection of Web sites devoted to all things Quake. "I used QSpy once and thought, 'This is the handiest thing ever,'" he says. "I called them and said we need to fully develop it and make it shareware—great projects like this die if guys don't make money."

Powell was resistant. He was leery of how it would be received as shareware and of dealing with support issues. But the seed had been planted. "We just kept thinking about it, and I realized I'm answering all these support questions anyway, so why not get paid for it?" Powell says.

They brought in Jack Mathews, the 3Dfx programmer who created Glide, to work on the interface. A few months later, the utility was relaunched as QuakeSpy shareware. The first day, 80 people registered at $20 a pop.

It's continued to evolve, getting more features, supporting more games—hence the new name—and gathering more users. While it hasn't made Powell as rich as Bill Gates, he's doing all right. "It's about what my current salary is where I'm working for the Navy," Powell says. "If it grows a little more, I'm considering quitting my current job and working full time on GameSpy."

The Navy better start looking for another programmer. GameSpy's plans are ambitious, with support for a full roster of upcoming games. "Just about every action game released in the next eight months will have GameSpy in it," Surfas says. "SiN, Blood 2, Duke 4, Prey, Turok 2, Half-Life, Kingpin, theoretically Daikatana..."

There are other good server-browsers out there (PingTool is one of my favorites), but no one else reached out to developers with a programming spec. That effort will help GameSpy grow beyond the shooter genre. BioWare is considering including GameSpy support within Baldur's Gate, and Acclaim's prepping a Forsaken dedicated-server patch with GameSpy in mind.

It's all very surprising stuff for Powell, who advises would-be programmers to just keep muddling along. "That's kind of what I did. I never thought GameSpy would become so popular, but it has..."

GameSpy 3.0, which should be out around Christmas, will expand community features so you can browse for and chat with people. GameSpy 2.02 (which supports Quake, QuakeWorld, Quake II, Hexen II, and Unreal) and the patch for SiN demo-support are on this month's CD. Once they're installed, see the help section for usage tips, or go to **www.gamespy.com** and hit the "Using" link for advanced optimizations.

Got a map, mod, mission, or shareware that's rockin' your world? Tell TheWeasel all about it at theweasel@pcgames.com.

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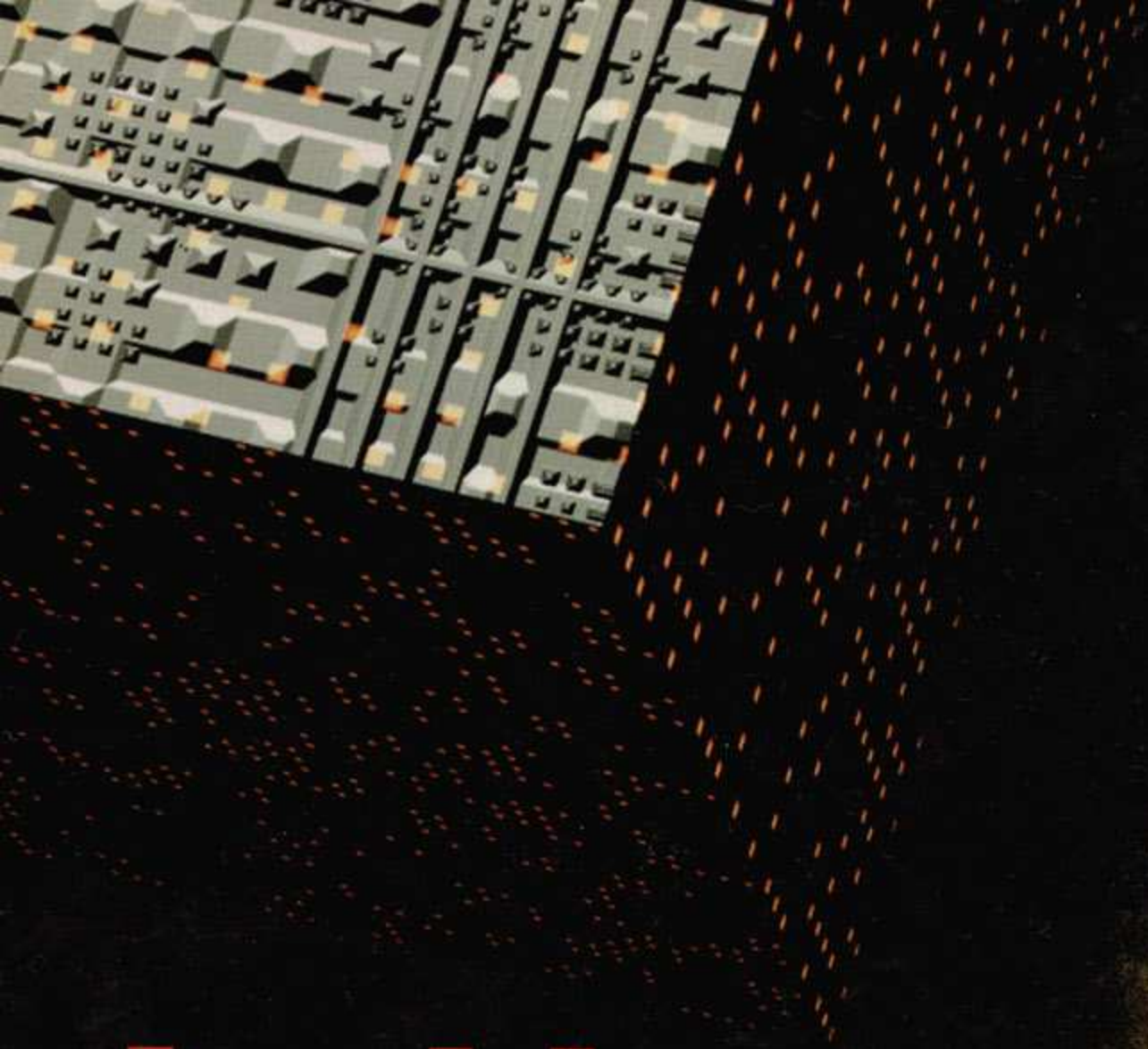

Inside Activision's Dark Side

By Daniel Morris

Heavy Gear II and Interstate '82 promise to be much more than just sequels. Fueled by the powerful new Dark Side engine, these games will offer environments much more vast, intense, and beautiful than was possible in the originals. And because Dark Side is a 3D-only engine whose creations will require a 3D accelerator to play, the resources are available for challenging new tactical dimensions.

Dark Side almost never existed. While execs ordained that Activision was no longer an engine company, producers and developers knew the Mech 2 engine—parts of which were also in Battlezone and Interstate '76—wasn't robust enough to do what they felt was needed for these two powerhouse sequels.

An enterprising I-76 code-pummeler named Julio Jerez quietly began building an object-oriented 3D engine on his own from scratch. Heavy Gear II director Jack Mamais snuck a peek when it was 30 percent done and immediately assigned three more programmers to the project. Mamais and lead programmer Jean Marc Morel convinced the execs that there were tangible, powerful benefits to Dark Side, and eventually it got the green light.

"Using the old engine in Heavy Gear, we could only get as many as five animations per gear," Mamais says. "With Dark Side, we estimated we'd get 30. We ended up getting 85, and the game runs great."

Dark Side allowed the Heavy Gear II team to easily implement new physics, handle eight times as many triangles and still get an acceptable 20 frames per second, and pull a particular module of the code and not have to worry about rewriting the whole thing, Mamais says.

The I-82 team saw the technology in action and knew they had to have Dark Side under their hood, too. Now Activision likes Dark Side so much, two more upcoming games are rumored to be using it. But before we go there, we have another mission to complete.

We went behind the scenes to get an exclusive in-depth look at Dark Side and what it means for state-of-the-art mechanized combat and the unfolding saga of our favorite auto vigilantes.

HEAVY GEAR II

Just don't call them Mechs

They're Gears, and you're in command of a five-Gear unit deployed on a hostile battlefield. You have no support from any friendlies—you're a special-ops team, dropped off and left to do or die. All you've got going for you is a squad of handpicked pilots, a selection of Gears customized for your mission, and a steely resolve to match the steel of your hull.

The universe of Heavy Gear II is a cruel one, so it's a good thing you get to wander it in the confines of a machine primed for destruction. The original Heavy Gear chronicled the civil war that raged on the colonial world of Terra Nova. With the planet successfully united at the end of that game, a new threat emerges. The Terrans are intent on conquering the breakaway colony of Terra Nova, and they're using the gateway world of Caprice as their springboard for the new assault.

The outnumbered rebels of Terra Nova have only one chance for survival—defeating the Terrans with a guerrilla campaign of pinprick attacks designed to disrupt and undermine the invasion.

That's where you come in. With a small roster of pilots you select your team from, you'll assemble a strike force based on individual skills and experience (which, should the pilot survive a mission, will change and improve). Your team will be dropped into enemy territory and assigned to missions involving reconnaissance, sabotage, ambush, and other tactics of the guerrilla's trade.

HGII is scheduled for a February 1999 release. Are you up for a dirty war fought with cutting-edge technology in the most hostile environments ever encountered by the human race? Of course you are.

Heavy Gear gets dark

Bringing the precision mayhem of HGII to life is the proprietary engine Dark Side, whose creators credit its technology for many of HGII's gameplay and graphics advances.

HGII will boast some of the most complex battlefields yet seen in a combat game. Gone are the original's flat desert landscapes. Now the fight will be taken to forests, mountain caverns, swamps, arctic tundra, urban cities, and even outer space.

"The technology allows us to move into and fight inside buildings," says HGII director Jack Mamais. "We created a very realistic structural-damage model. You don't just have buildings with hit points that crumble after a certain amount of damage. They take structural damage and collapse very realistically."

In other words, when you snipe from the cover of a building, you take the dire risk of getting stuck in a hastily condemned deathtrap.

Fighting in HGII's forests may well be the most fun robot warriors could ever have. The Dark Side engine allows each tree to exist independently in 3D—with an astonishing level of interaction. In a mission we played, our Gear was running through a forest evading enemy fire when a blast struck a tree. It shattered into two halves, which rolled to the ground.

The Gear was easily able to lie flat on the ground and use the halves as cover. Sticking the gun barrel through the gap between the halves, we could return fire while shielded beautifully.

"More objects mean more tactics," says Mamais. "Terrain contours, woods, rivers that can be waded into and submerged in...it all adds up to new strategies based solely on objects within the engine."

The design team is putting in extra effort to ensure a highly realistic physics model. For missile fire, they are studying the results of actual Lockheed missile tests. Now, when your Gear unleashes a short-range shoulder-fired missile at a distant opponent, the missile's targeting, trajectory, and flight path will mirror those of an actual Lockheed missile launch.

Above and beyond

HGII's plot unfolds linearly over 20 missions, beginning with five missions on the colony world of Terra Nova. Advance scouts from the Terran invasion force must be intercepted and dispatched and their intel-gathering efforts submarined. Then you'll have to take the fight to Caprice, the interstellar gateworld housing the Terran fleet.

This Gear takes advantage of a fallen tree by fashioning an improvised bunker from it.

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Gears can move underwater, providing a great new angle for sneak attacks.

The unfolding campaign will take you into all manner of dangerous, detailed environments, each presenting new challenges and opportunities for specific tactical thinking.

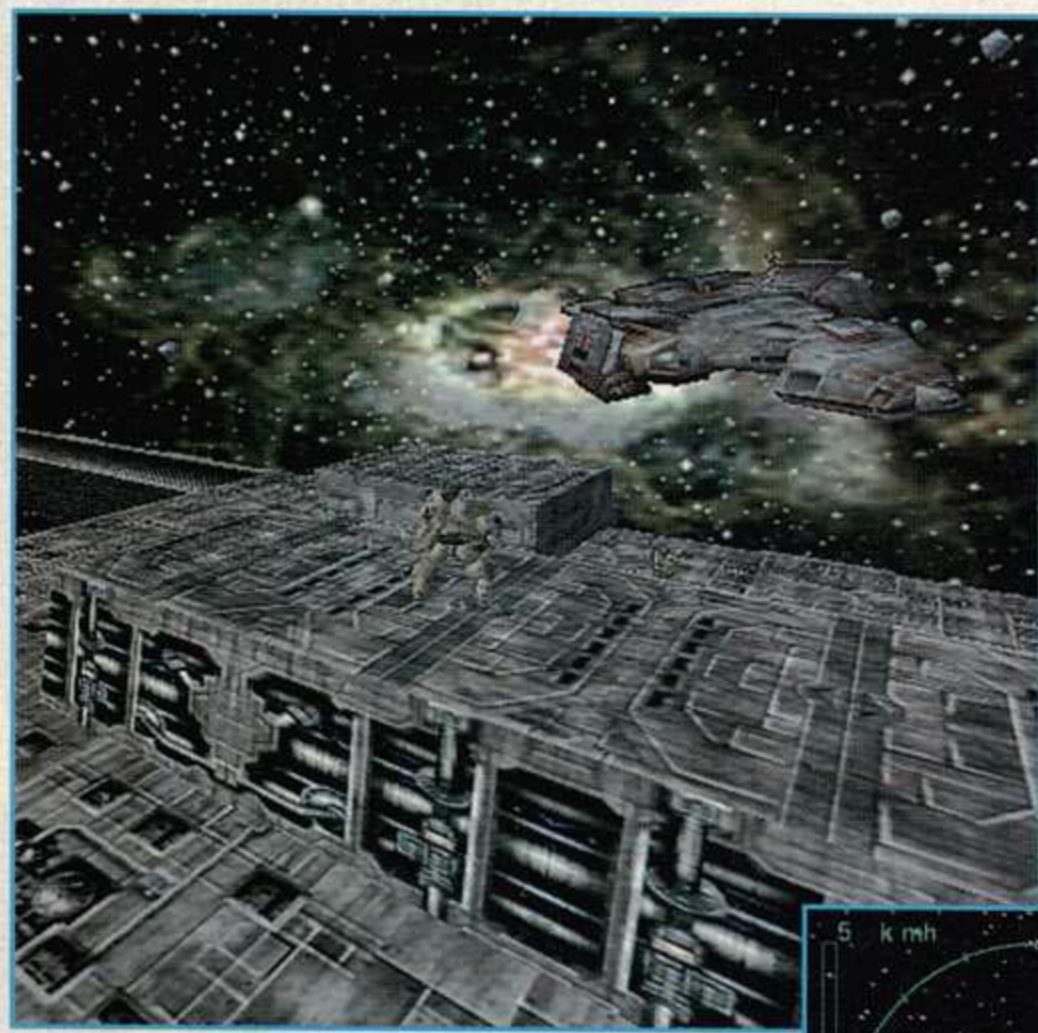
Rivers provide conduits of advance, as your Gears can usually head underwater to move. Of course, just be sure it's not a river of lava. The arctic environment features snowbanks and sheets of ice—tough to handle when you're looking for traction. Swamps will feature mucky areas that can potentially drag you under, and mountainous zones are pocked with gullies and ravines that can serve as perfect hiding places for a patient enemy.

The specifics of your mission will determine what your particular strategies will be and what your mission customizations will include. You'll have 75 weapons at your disposal, with access to new technologies granted by your hard-working scientists as well as via the classic method of collecting battlefield salvage.

If your goal is simply to reconnoiter a base and not draw any attention to your unit's presence, then you'll probably want to direct your unit through a very stealthy approach and extraction. When it's a case of "Knock out that beacon at all costs," a better plan might be to send a Gear directly into engagement as a decoy and then raid the beacon building from another direction.

The arctic world at night.

No matter what you decide, environment will factor heavily. Being able to move and fight inside buildings opens a whole new dimension to battles, as you'll have to clear and secure the buildings you pass to ensure that no hidden enemy Gears are waiting to pop you in the back.



The Dark Side engine is strong enough to lift Gears into space for the first time.

Without a doubt, outer space is the most eye-popping, nerve-wracking environment of all. These missions will require you to engage the enemy on the hulls of starships. In Gears specially modified for space combat, you'll employ magnetized boots to ground your Gear to the hull of the ship, plus grappling hooks to rappel quickly across the faces of the structures. If you get in trouble—that is to say, become detached—your last recourse will be EVA packs that provide brief bursts of power for momentum changes in space.

The space fighting will be especially challenging because the starship hulls are anything but flat; they curve and stretch across 360 degrees, sometimes making the battle seem like it's being fought on the surface of a weightless, zero-gravity Escher puzzle. Weapons physics change in space as well, to better reflect the challenges of hitting the enemy without the benefit of an atmosphere.

AI and tactics

The detailed environments and realistic physics of your superweapons put a new kind of stress on a commander. The future of mechanized combat will require a hefty amount of intelligence to go along with all that iron and ordnance. Activision is determined that HGII will successfully implement a convincing and challenging AI.

So far, the designers' biggest challenge seems to be that the AI is *too* good.

The original Heavy Gear tactics model came mostly from a book on tank tactics, so despite the fact that Gears are man-shaped, bipedal vehicles, HG's combat was very tank-like. For the sequel and its squadron emphasis, modern infantry philosophy was brought to bear.

The design team employed a former US Army Ranger to provide a working "playbook" on small-unit tactics, both for infantry and for tanks. Using his input, the AI team has been able to craft intelligent opponents and squadmates who conduct themselves crisply and smartly. If anything, the designers caution, they're working on increasing the chances for AI error because sometimes the artificially intelligent units operate so quickly and efficiently, human users stand little chance against them.

When ambushes work, they work nicely. Three enemy Gears have the drop on you.

Original scripting helps "massage" the AI to produce mission-specific effects. For example, the destruction of an enemy base

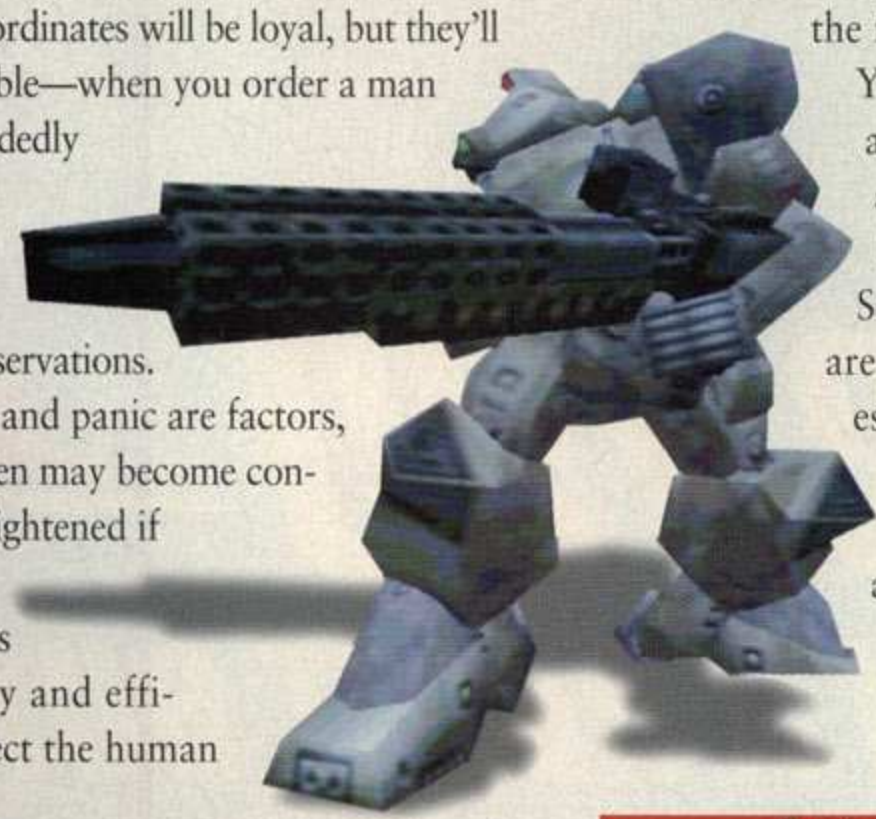
Magnetic boots and a grappling hook will keep Gears anchored to starship hulls.

may trigger an AI script that sends the base commander fleeing. The units defending the base commander, however, are not scripted and react flexibly to your attempts at assassinating him.

The idea, Mamais says, is to "avoid the 'beat-the-script' style of mission play, where you just play the mission enough times to figure out where the holes in the script are and then exploit them." Responsive enemies are going to slowly figure out your tactics and adjust their own to adapt to what's working and what isn't.

Your command of four AI squadmates is obviously crucial to the mission's success or failure. You direct their actions in close concert with such orders as advance echelon right or left, flank-and-fire, or take cover. An overhead tactical map allows you to lay waypoints for an advance or retreat.

Your subordinates will be loyal, but they'll also be sensible—when you order a man to single-handedly engage an enemy platoon, he'll have deep reservations. Battle-stress and panic are factors, too. Your men may become confused and frightened if mishandled. Commanders who smartly and efficiently direct the human element stand the best chance of victory.



Electronic warfare

Ever had the feeling when playing a futuristic combat game that there simply wasn't enough reliance on electronics and computers? After all, warfare at the turn of the 21st century is increasingly dependent on long-range engagements handled largely by radar and electronic sensors, as well as by computer targeting to deliver weapons from long distances.

Electronic warfare takes center stage in the far-future world of HGII. You'll live and die by your ability to detect, identify, and locate enemy units before they locate you. Sensors and stealth systems are of highest consideration, especially since your missions involve precisely detailed goals. "Go in and waste 'em" isn't a plan, and you'll need top-notch intel prior to your assaults.

Magnetic sensors are better than radar, since the magnetic resonance of your mag sensors better identifies and pinpoints enemies. You can activate passive or active radar (or a combination of the two, split between different members of your unit). Active radar will collect precise data, but only at great risk to the collector, who is simultaneously beaming his signature and location to all hostile units. Passive radar is "quieter," emitting no ping, but it's much less reliable as an info-gathering tool.

So here's where the strategy comes in. A huge element of successful gameplay—both in single-player missions and in multiplayer team deathmatching—will be the ability to win the game of electronic cat-and-mouse. One tactic might be to outfit one of your team's five Gears with a huge array of electronic-warfare sensors, and then use him as a one-stop-shopping intel post. Of course, he'll be a prime target for the opponent, who will be better able to zero in on the intel Gear because of his increased sensor signature.

Cockpit view: The radar's identified three bad guys, including the guy directly in front of you.

The opposite tack might be to rely on the sensors of individual Gears, trusting that you can piece together a big view of the battlefield from the little pieces of the puzzle each Gear provides. It's safer, for sure, if much less reliable. Whatever you choose, you'll also have to react to the enemy's decisions. If he actively pings your unit with radar, you'll know right where he is; but he'll know where you are. If he's going the quiet route, you'll have to decide between pinging him and playing hide-and-go-seek.

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Don't step in the lava...

The duelists

All of this should add up to a rich and involving combat game, and Activision wants to ensure that HGII keeps its "legs" with a multiplayer dimension to match its deep single-player campaign.

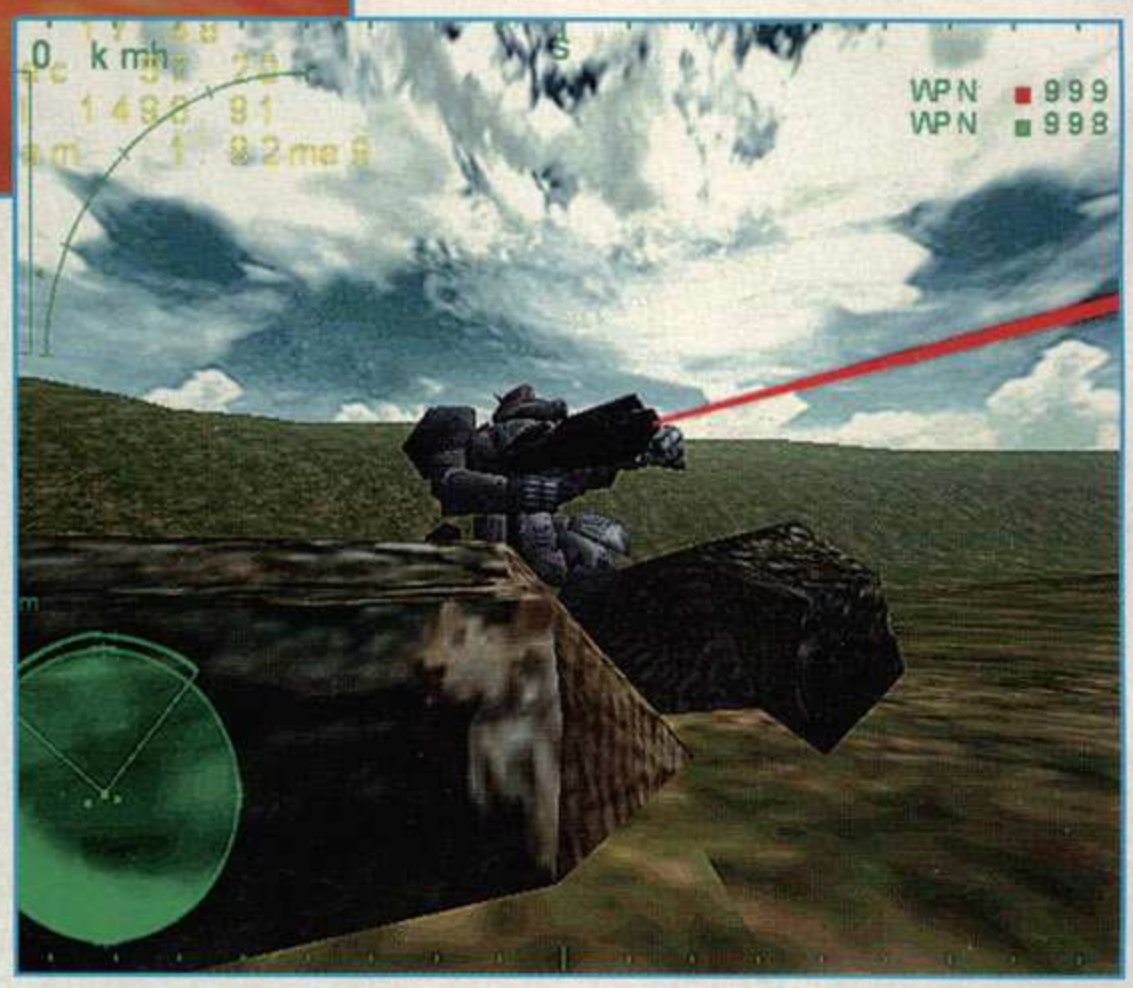
The "duelist" mode will be the simplest. It sends two players head-to-head in single Gears. There are multiplayer maps for all the game's environments, from swamp to space. You can also play as per the single-player mode, with you and your opponent controlling four AI squadmates. Here's where tactical consideration will determine winner and loser; squandered squadmates will get chopped up by smartly deployed opponents. Using electronic warfare and environmental factors intelligently will be just as crucial as a fast trigger-finger.

More involving yet, 10 humans will be able to go at it at once in a five-on-five team deathmatch. Combined arms, communication, and cooperation will be paramount to your unit's success.

Activision plans to arrange for monitored leagues at a central Activision Web site, with a ladder system for ranking both teams and individuals.

Deathmatchers will have their choice of technologies from any of the four HGII factions: Terran Gears, Northern or Southern Terra Novans, or Badlands. Of course, customization of your favorite Gears will play a part in your victory or defeat as you tailor your unit to a specific game plan. Multiplayer customization has been significantly improved—you can save a customized Gear and import it into a game, and you can set up a time limit for customizing so you don't have to wait endlessly before getting to the battlefield.

Attack, siege, escort, patrol, explore, sabotage...it's all in a day's work for the guerrilla commanders of HGII. Taking advantage of the Dark Side engine's ability to craft startlingly detailed worlds—and its ability to make tactical responsibility a key element of success—HGII looks to be the next big leap forward in the mechanized-combat genre. Tension, technology, and tactical challenge—it's a recipe for excitement in this age or any other.



Lasers and beam-weapons such as particle cannons provide heavy artillery.

Crouch to expose less of a target to the enemy.

On the Disc

This month:
Exclusive Heavy Gear II .AVI, plus more concept art and screenshots for HGII and Interstate '82!

Next month:
Exclusive Heavy Gear II playable demo!

You know and we know the '80s sucked. Now dig this: In the parallel Earth of Activision's I-76 universe, the '80s suck even worse. Because America, which had to be brought back from the brink of anarchy during the oil crisis of 1976, now faces an even graver threat.

And Groove Champion, the king of the auto vigilantes, has gone missing.

Forget the funk

As we catch up with the beloved badasses of I-76, we find out that Groove Champion, the bearded blond avenger who laid waste to the four-wheeled hellions of the original, has been kidnapped. His sister Skye is determined to find him. Old friend Taurus, who could tie Shaft into pretzel knots, doesn't much like the idea of Skye taking off after Groove. After all, Taurus has seen one too many Champions die already. So he takes to the road in search of answers.

It wouldn't be giving anything away to spill the fact that Groove is safely rescued in the early missions, and once he's back comfortably behind the wheel of his car, he sets out to demolish a vast conspiracy aimed at supplying cash to the Contras in Central America. It's a conspiracy that stretches to the very top—even to the office of a certain ex-actor president.

In the meantime, the nation has traded in funk for New Wave pop, idealism for consumerist contentment, communes for shopping malls. One thing hasn't changed, though—the roads are still a very dangerous place. Ruling the highways are the well-armed muscle cars of the '70s and new '80s additions like a hot rod, a *Miami Vice*–style sports car, a wood-panel station wagon, and a ZZ Top roadster.

With America's bandit lords still high in the saddle and terrorizing the blacktop, the job of the auto vigilantes isn't over by a long shot. The job just has to be done to the music of Devo, that's all.

Rev up the muscle cars and let's find out what's really locked away in Area 49.

"Guys were actually calling me up when we announced [the game] and complaining, 'The '80s sucked,'" says Zack Norman, I-82's director. "And I was like, 'Yeah, dude, the '80s sucked. But so did the '70s, and look what we did with them.'"

Norman's enthusiasm for the kitschy excesses of both decades has provided most of the games' memorable era details. His passion for Devo led to a soundtrack that includes never-before-released tracks literally dug up in the band's basement.

Under Norman's guidance, the wasteland of the early '80s has become the next battleground between good and evil.

Synth-pop samurai

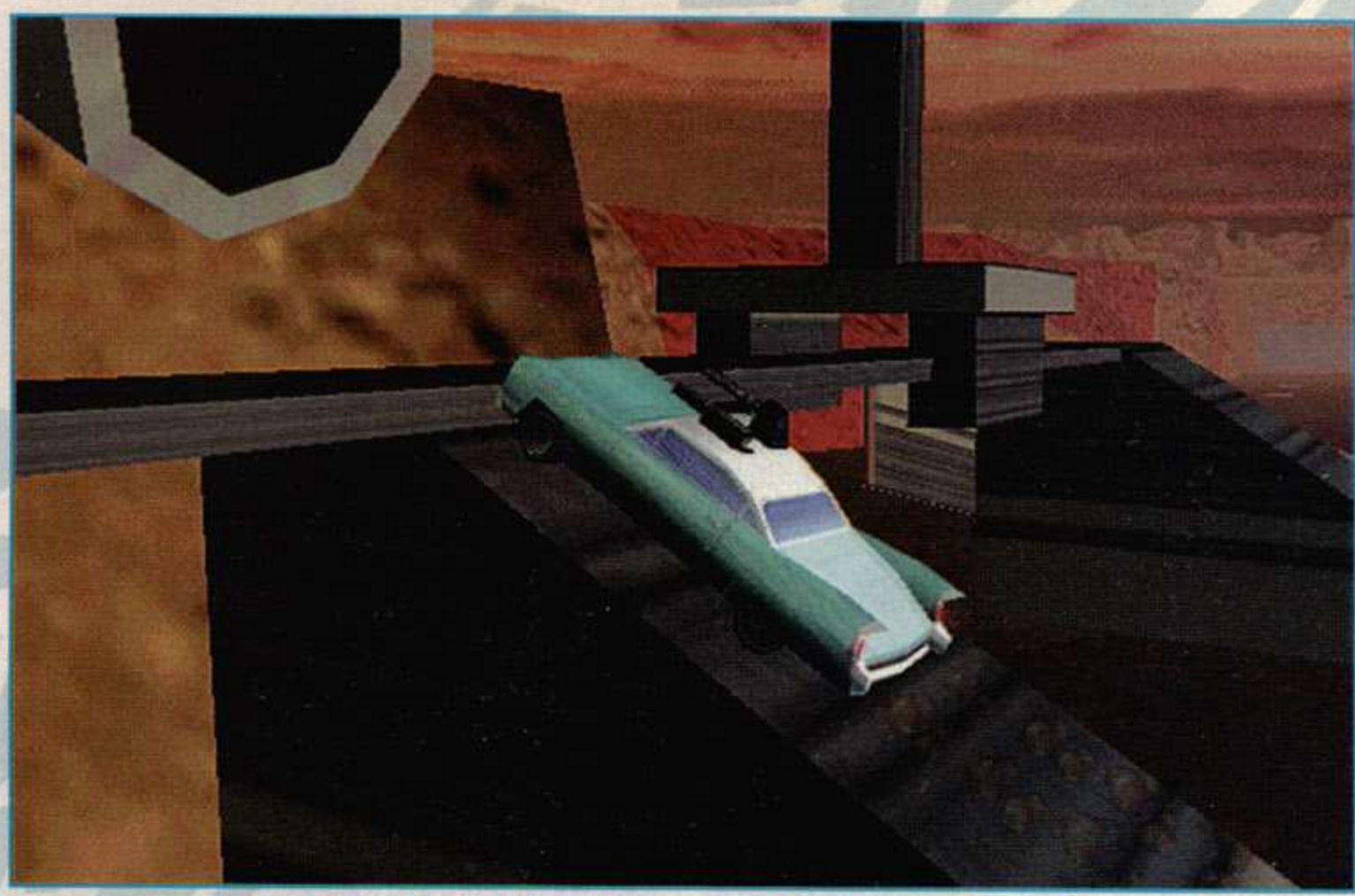
The I-82 design team took full advantage of the Dark Side engine technology to create surprising new environments for the car wars of this alternate 1982.

"We wanted to get way beyond the flat desert landscape of I-76, which was there for both creative and practical reasons," says Norman. "This time around we knew we wanted some interesting new places to go."

They tried to stop you. You weren't having it.

So while you can still expect a fair measure of desert dueling when the game comes out this Christmas, I-82 will also offer missions in a variety of new locales. Among them are a vast subterranean subway system, an underground sewer, a shopping mall, the wild and woolly city of Las Vegas (with all its 1982 buildings and parking garages), and even a secret base called Area 49 that's rumored to hide...well, you know.

The designers use the phrase "large driveable mesh" to describe the object-oriented environment design provided by the Dark Side engine. It allows I-82 drivers to go places and do things they couldn't even imagine in the first go-round. A "mesh" is simply an object placed in the 3D world, like a bridge. "Driveable" means it can be traversed, which allows for a bridge to be crossed. And "large" came into effect when the designers began to build meshes that could be multilevel, vertical, and still driveable. Thus, the large driveable mesh was born, and it's the secret to I-82's new heights and depths.



Architectural tricks like ramps, bridges, and elevators will make navigating the game's buildings a big challenge.

"Vertical gameplay really adds a lot," says Norman. "We'll have fights in multi-level garages, in the different levels of the mall, up and down in the sewers."

So you'll be able to snipe from above or below, and sight enemies who may be crossing your path at a different elevation within the 3D world.

Norman demonstrated this new gameplay angle in the massive sewer level. Narrow steel tubes crisscross through open space, sometimes passing directly above or beneath one another. Perched at the edge of one elevated tube, his car has a perfect vantage point overlooking a tube crossing beneath.

Or, for a shoot-out with a more elitist backdrop, you can even take the battle to a golf course, complete with benches, tees, fairways, and sand traps. And what I-82 golf course would be complete without fully armed, weapon-bearing golf carts to fight with?

One thing I-76 fans will immediately notice is just how much *bigger* the levels are in the sequel. The city area of Las Vegas is unbelievably huge, and it includes a life-size re-creation of the Strip right down to the individual hotels and casinos. The Area 49 location is similarly vast, with its desert surroundings, the sealed perimeter of the base, and the asphalt interior's slew of buildings and hangars. And it's all driveable.

A concept artist's preliminary vision of the hell of Las Vegas in I-82.

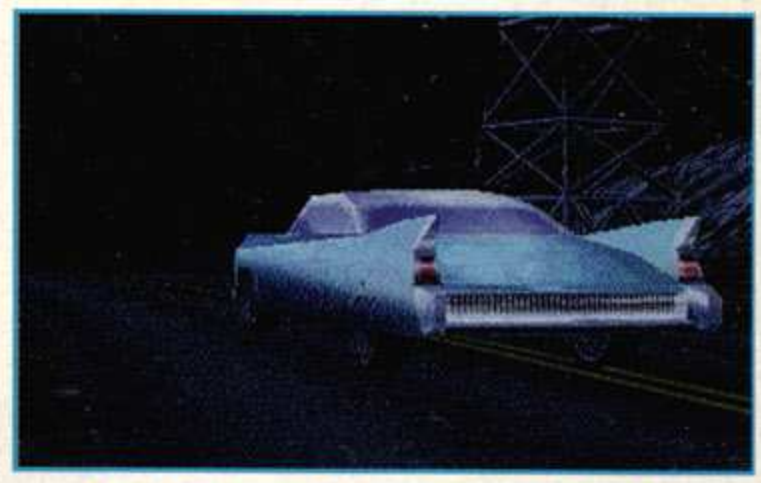
The fact that you can go just about anywhere in I-82 required some new physics modeling, which the Dark Side engine also helped to smooth. If you go off-roading in a Leonetti Peregrina (which is, of course, just a nice and unlicensed way of saying "Lamborghini"), you can expect much worse handling and suspension problems than you would in a jeep.

The classic Leonetti Peregrina returns.

Also new to the game is tumbling—and it can be a nail-biting experience. Your car can now flip, roll, and be upended. It'll take damage according to the severity of the tumble, not to mention the fact that if you roll and end up upside-down, you've got a small logistical problem to take care of. The same physics that allow for the tumbling also allow for falls and plunges, as when your car finds itself sliding off an elevated road. If you're 10 feet off the ground, you'll probably land upright and roadworthy, though your car will take damage. But if you drive off a cliff or into a bottomless gorge, well...let's just say you'd like to avoid that.

Don't plunge off any cliffs, because you won't land upright to tell the tale.

Stunning new particle-effects create some of the most convincing smoke trails and damage effects yet seen in a computer game. Explosions and fires create thick, oily smoke that can cause congestion and obscure vision. Missiles leave perfect, dissipating trails that can be followed by eye and traced to a launch point. Even the dust your tires kick up depends on the surface you're driving on.



The highway's a lonely haul at night.

"When we were marketing I-76, we emphasized the story and the setting more than anything else," Norman says, showing off the engine's brilliant graphical punch. "But this time around, the graphics are just too good. We're almost forced to sell them."

Less talk, more action

Customer response to I-76 was almost unanimous in demanding more action features next time and fewer strategic/sim features, says Norman.

"We've really streamlined the sim elements," Mamais adds, "because most people were telling us they simply didn't use them."

The result is an I-82 that cuts to the chase. Skeeter, the I-76 mechanic, is gone. Most of the decision-making and resource manage-

Thick, black, oily smoke will mark the smoldering remains of your lessers.

ment is handled in an innovative new drag-and-drop screen, much like Diablo's.

The car is divided up into squares depending on its size and allotment of accessory space. As you upgrade and modify your car, you drag and drop everything—shields, weapons, special car parts—into the available squares. If you're driving a tiny car, there probably won't be enough space for a giant new cannon. Either way, you'll know immediately and intuitively because of the graphics-based modification system.

The upgrade screen is broken up into three areas: Weapons, Shields, and Specials. Shields will allow you to outfit your car with defensive measures to ensure a bit longer road life. Armor hangars will provide defense against projectile fire, while such goodies as the electromagnetic shield will prevent ECM pulses

Hey, no tailgating!

from knocking out your electronics. All of this is upgradable, and you can add to your list of goodies through salvage out on the road.

There are some new weapons and toys to outfit the car with, naturally. Some of the ideas are classics, and others downright new. One classic addition is a carbite cutter, better known as "that knife thing that can be stuck out from a wheel well to chop up the other guy's tires, like in James Bond." You've got 'em now. Other contact weapons designed for up-close fighting include a sonic disrupter that can screw up your opponent's on-board systems.

The game's particle-physics even distinguish dust by surface type.

Chaff and flares will make missile combat even more interesting. If you get targeted by a missile, unloading them will help confuse the bogey and buy you time to make an evasive maneuver.

A brilliant addition to the new weapons system is the "carpoon," a harpoon launcher mounted on your vehicle. Needless to say, the carpoons aren't merely sharp sticks; they're also delivery systems for a whole range of nasty weapons. Among the carpoons you can stick in an opponent is the Narc Beacon, which gives off a strong pulse that betrays the target's location to everyone around it. Another carpoon delivers the EMP Pulse, which cripples all the car's electronic systems and often the engine as well. Then there's the MISER, an acronym for Microwave Scrambler, which inflicts disastrous heat damage to a vehicle.

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You'll leave your car to open gates, get powerups, and steal cars.

Perhaps the most thrilling new device in I-82 is LARS, the Light Amplifying Reflective Satellite. Anyone who has seen *Akira* probably remembers SOL, the devastating satellite weapon that could inflict apocalyptic damage to its earthside targets. LARS is I-82's homage to that killer satellite of anime tradition. It circles Earth waiting for computer instructions on where to make its massively destructive pinpoint strikes. And if you should happen to come across the code...well, let's just say you can rain down hellfire.

Step out and swing

The other big addition to I-82 gameplay is that sometimes you'll have to go on foot. "About 10 to 15 percent of the game will involve being outside your car, on foot," says Norman. "And a lot of the missions will absolutely require that you make smart decisions about when you need to hop out."

For example, you may encounter a gate that can only be opened by a switch. You'll have to park your car, get out, and throw the switch before getting back in to get through the gate.

"Obviously you're vulnerable, and we've made it so that you can't realistically engage a car while you're on foot," Norman adds. "You can shoot at it and damage it. But believe me, you'll want to be in a car as a general rule."

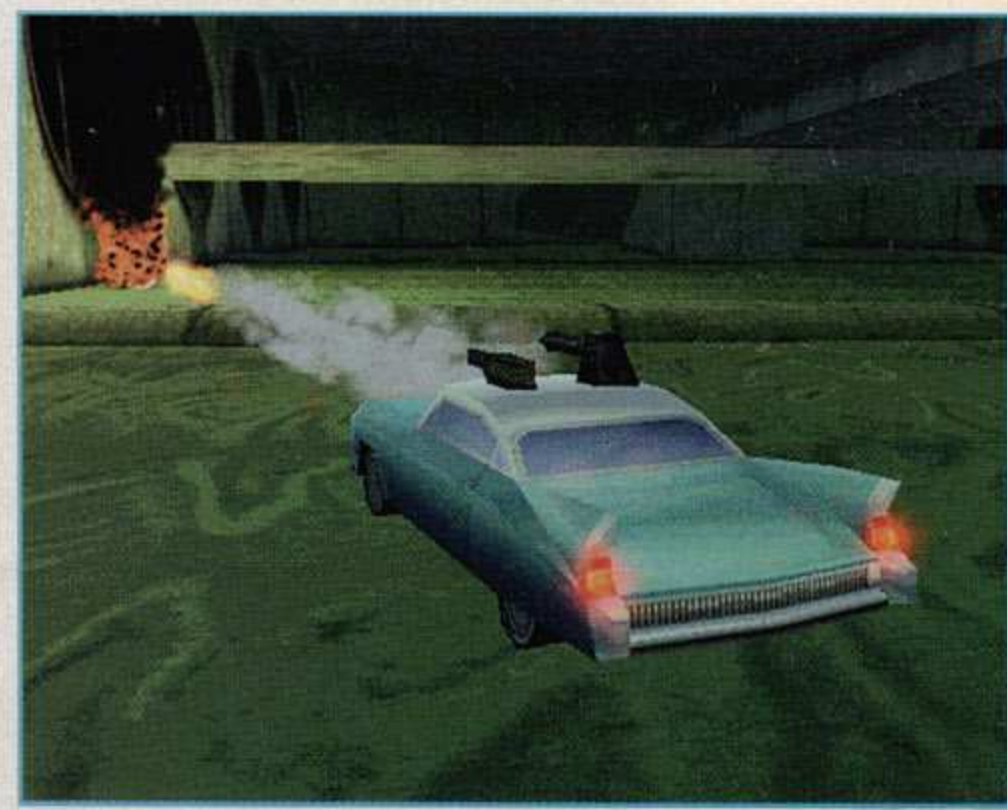
Hoofing it will also factor into decisions like stealing other cars. If you spot an enemy leaving his car, and his ride is superior to yours, there's nothing stopping you from jumping into it and taking off. Unless, of course, he's installed an anti-theft device, which will punish you supremely.

You may have a gun, but you're no match for players in cars.

Extra-vehicular gameplay becomes especially important when keeping score in multiplayer deathmatching, because you get credit for killing *drivers*, not cars. If you cripple an opponent's car but the driver himself manages to bail out and escape, it sucks to be you. You need to kill the *man*.

This should lead to some hectic deathmatching when drivers abandon their ruined cars and try to snag a new one before getting mowed down by other vehicles. Hand-to-hand fighting will be incorporated, along with a pistol to allow pedestrians at least a chance of surviving until they can come up with a new car. The 80 animations will bring the drivers to life—and death, rendered in awesome detail.

Other vehicles you can commandeer include a helicopter and a motorcycle.



Dynamic lighting lets missiles illuminate their course through darkness.

They'll have their uses, but they're mostly just novelty acts. People who make it a habit to fly or bike will find themselves on the short end of the victory stick most of the time.

Just as Groove, Taurus, and Skye take on the forces of evil, Activision's design team are tackling cheaters. They promise that I-82 will be tough to hack, and even when it eventually succumbs, there'll be a feature that allows password-protected servers and server control to boot cheaters from games.

I-82 looks like it'll retain the cheeky, creative edge of its predecessor and push much further in scale, graphics intensity, and intricacy of gameplay.

It's going to be a wild, woolly year. ■

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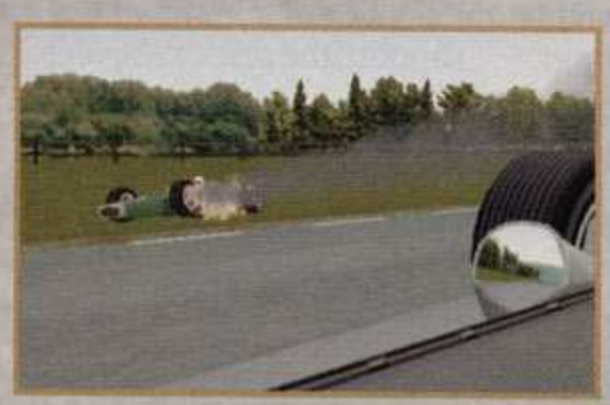


Evolution of a Jungle

By Levelord

Levelord (sometimes referred to as Richard Gray) knows what it takes to make a good map. He should—the Navy man turned level designer did half of Duke Nukem 3D's levels and five in the Scourge of Armagon Quake mission-pack (including the excellent HipDM1). Now finishing up SiNful duties at Ritual, Levelord walks through the creation of SiN's complex Jungle Pass map so you can see the theory and practice behind creating a level people will want to play.

Level designing is like cooking: Very little escapes the audience's attention, whether good or bad. A poorly planned level will be as obvious as an undercooked meal. And an overly ornate level will burden the player's palate like an overly seasoned entree. I'd like to take you through the complete evolution of a level to show you the process I follow to create a Levelordly level, using the Jungle Pass level found in SiN. This is a good example because its underlying concept is simple, yet building it requires all the major concepts of a great level.

There are two camps of level designers: those who lay all the basic groundwork first and then do the finessing, and those who start with the smallest of details and work to tie them all together. The first group's method is similar to top-down programming, and its proponents will build the level's fundamental foundation first, then sweep through numerous times getting increasingly detailed with each pass. Bottom-uppers, on the other hand, completely cast each and every room as they weave along the level's critical path. Both strategies have their advantages, and it's best to just let your own nature take over. Being an ex–bit jockey, I prefer top-down, and will follow that paradigm in this example.

Both approaches require plenty of planning before a single brush is cast. You absolutely must plan your level before you do anything else! Otherwise, a lot of time will be wasted and a lot of brushes will be tossed. Trust me, this can be truly heartbreaking. Having said that, there is, in fact, cause for some free-flying while creating your level, but the following foundations must be determined ahead of time.

Concept, textures, path, and lighting

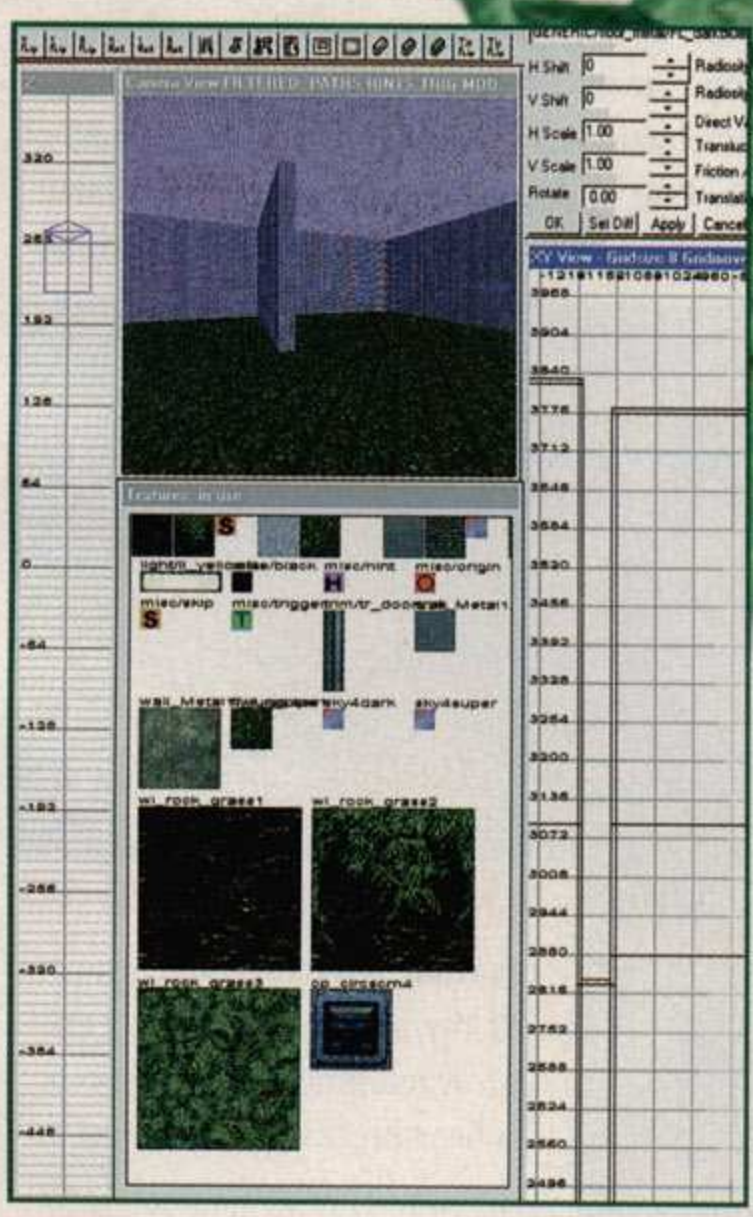
You need a concept for the level's theme and setting, and it must be interesting enough to support the rest of the level's aspects, not just a few rooms.

Think of how many levels you've seen that were merely a haphazard collection of cool but uncoordinated "sets of rooms." Don't do that! Your level needs a basic texture-set directly related to the level's theme. It must also have a critical path, whether it's a single- or multiplayer level.

As part of their planning, some level designers draw their level on paper first, while others fly by night with only their mental image guiding the way. I rarely plan entirely on paper because a level drawn in 2D tends to end up 2D. I also find that most of what's made any specific level cool came from ideas I didn't have until I was already partly done with it. I do, however, have most of the level's components sketched in my War Book before I actually start editing.

The War Book.

The most fundamental aspect of any level is its textures, and they deserve special attention. In many ways, the entire level will

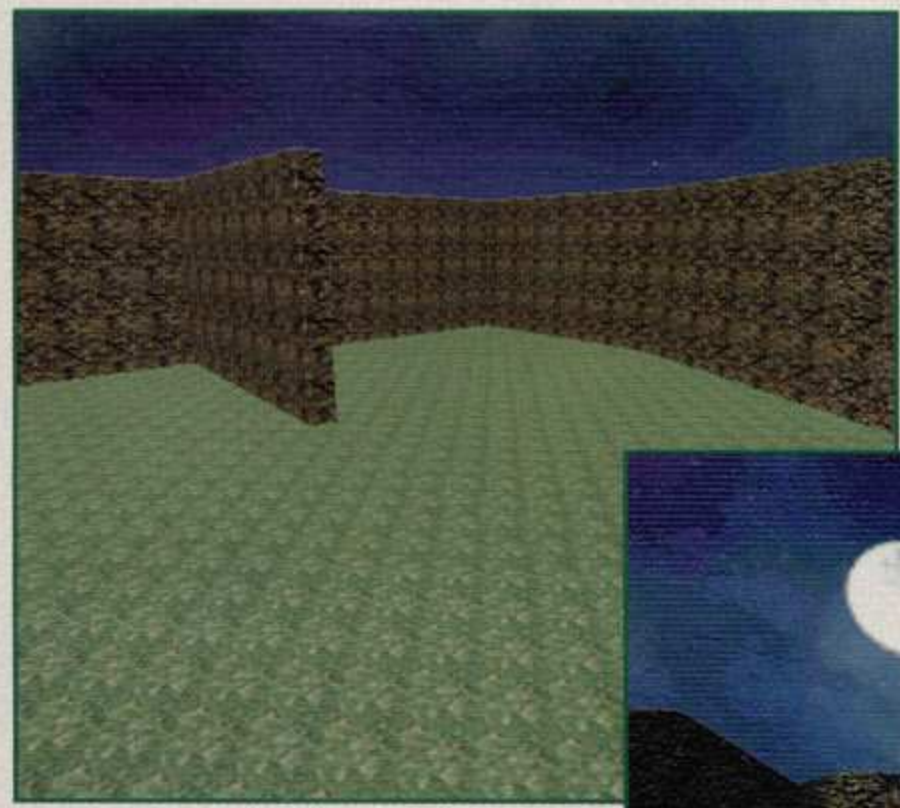


Make sure you have the textures first.

revolve around the textures that paint its walls, ceilings, and floors. Like the effects of a good suit at a job interview, most of the player's "first impression" of your level will be based on the right texture-set used correctly. Whether you have your own

or use an existing one, it's a good idea to make sure you have the right textures for your level's theme. You need to think ahead a bit and make sure you have a complete texture-set. This is especially important toward the end of a level's development, when you're detailing.

Another important global aspect of level development is lighting. Unless your level is completely indoors, which too many are, you need to establish the grand light source. In the Jungle level, most of the light will appear to come from a moon-in-the-sky texture. You should also add your level's basic lighting now. Don't spend too much time on lighting yet, though, as there may still be drastic geometry changes coming up. Second only perhaps to correct textures, lighting is very important, both aesthetically and in serving to enforce realism. Lighting should be dramatic, with high contrast and lots of sharp shadowing.



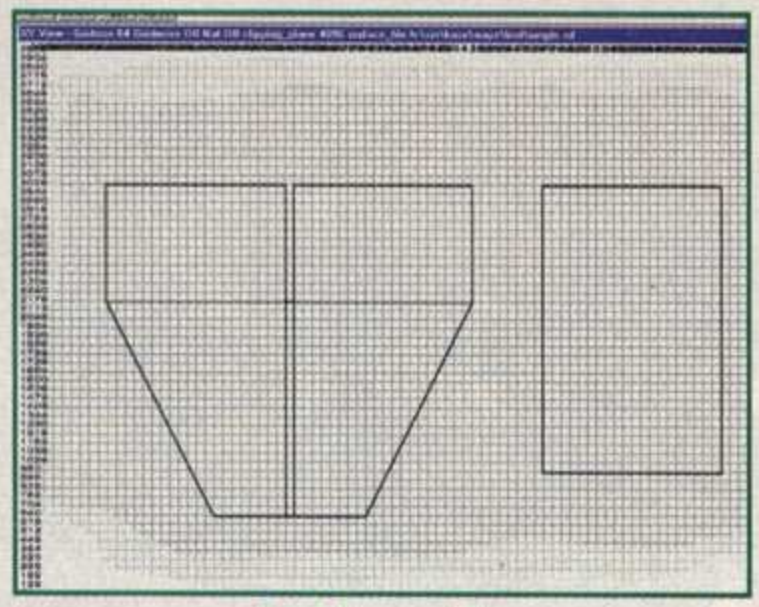
Basic lighting and simple mountains.

Now is also the time to have your critical path determined. Of course, this will depend on whether the map will be single- or multiplayer, but you can cater to both with little side-effect. In general, the single-player critical path will be more linear, whereas the multiplayer's will be more circular. This topic deserves its own article, as it relates to just about every other aspect of your level—geometry, character/goody placement, and size, to name a few. It's actually best learned on the streets—by doing. If you want to design a good single-player level, study the ones you've enjoyed and pay close attention to the level's flow as it crescendos to a climax of increasing challenge and reward, then drops you off into the resolution and closure of a good, solid ending. If you want to design a multiplayer level, play a lot of deathmatch and, again, pay close attention to why it's good.

Backups and frame rate

Back to the level at hand...as we reach the midpoint of our evolution, it's a good time to remind you to save your level in stages as you develop it. That is, make copies of your levels to incremental file names such as JUNGLE.001, JUNGLE.002, and so on. Not only does this serve as a backup system in case of system/editor crashes, but it also allows you to backtrack. I often find I want to change course in the middle of a level's development, and these changes can sometimes be drastic. For example, I found that an entire section of the Jungle was not going to fit with a change in plans for an ABO (action-based outcome) and had to remove it. Later, I wanted to reinstate most of the deleted section. Thank goodness I had a backup version!

Second sweep of bounding mountains.



Prefabs are fab.

I strongly suggest constructing a set of basic, prefabricated rooms and areas for your entire level. I always have a set of boilerplate rooms and hallways and such off on the edge of my developing level. Many designers are afraid of appearing cheap by copying and pasting sections of a level, but I believe it adds to the level's consistency and theme. You must be very careful, of course, and provide enough variation in your replicas to not appear cheap.

Whether you're coming from the bottom-up or the top-down school of level design, add your details very slowly and check frame rate often! I highly recommend doing frequent VISs for this. (For more on VISing and frame rate, see my February 1997 *PC Games* Quake-level article.) It's much easier to not add a cool set of details than to remove them later. As often as I say that, though, I must admit that many details get cut out of my levels toward the end of development. This process is heartbreaking: I often feel as though I've been through boot camp, truly calloused and hardened, when I think of the anguish during this portion of a level's development.

Watch the frame rate as you go!

Simple but undeniably lordly.

In my Jungle Pass level, this is the time I start adding my mountain brushes, sloping

floors, and waterways. The first step is to establish the level's bounding mountains. These should be very simple in polygonal surfaces, and their texture can be stretched by a factor of two or four or so, depending on their nearest distance from the player. Stretching textures, by the way, is a great secret that I've explained in previous articles. Basically, it saves frame rate from bogging and should be used whenever you have surfaces far enough away from the player (at all times) to never be noticed.

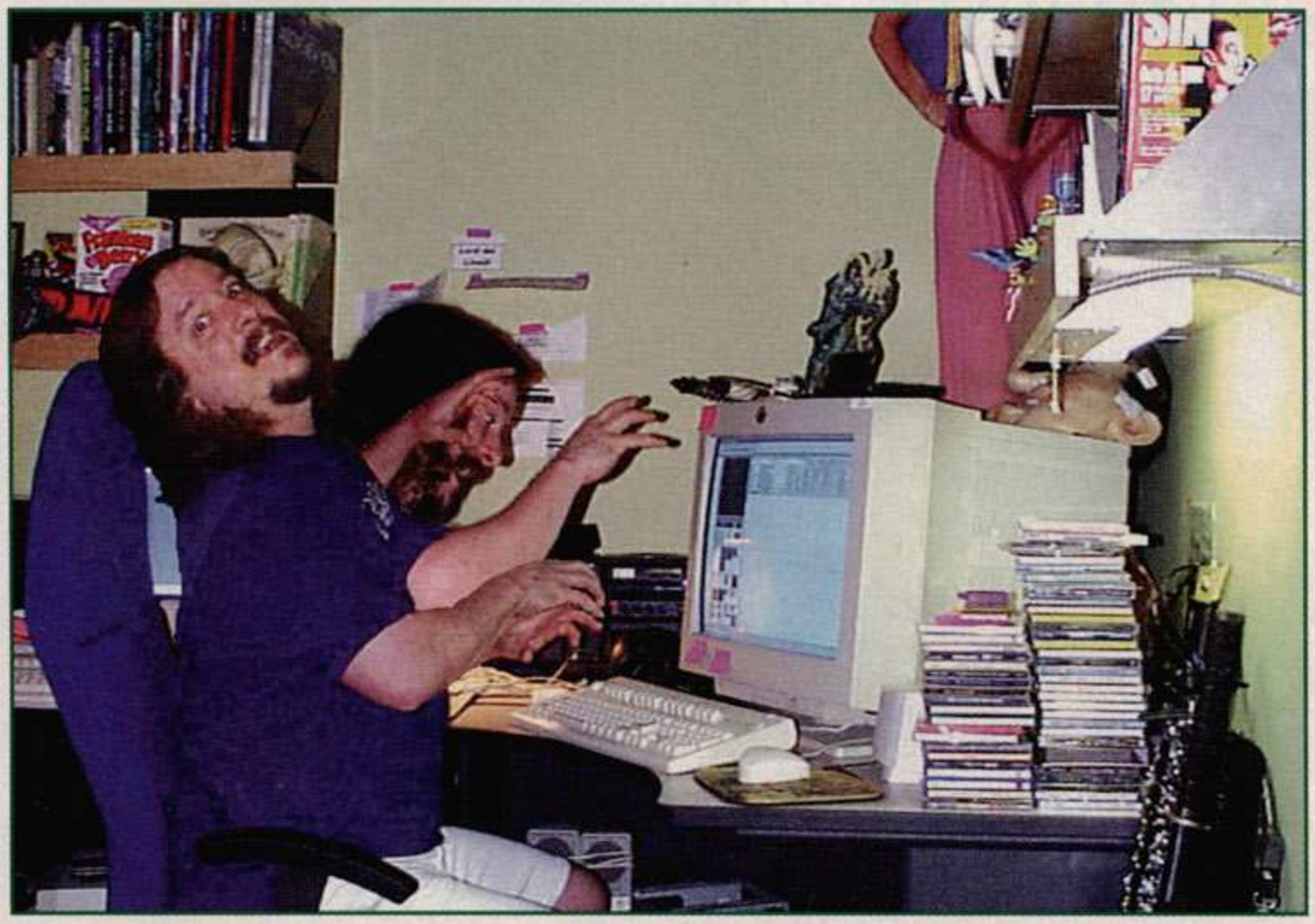
Once the surrounding mountains have been constructed, I add a second set of smaller mountains, hills, and grassy inclines. Anticipating frame rate should be your first concern as you do this so that the mountains themselves don't soak up too much processor time. Keep them simple and irregular. I'm often amazed at how cool a simple set of brushes looks after they are lit and shadowed; don't let the crudeness of the editor's view dismay you. And try to be as irregular as possible when casting these brushes—nature knows few right angles.

Overly ornate can kill your frame rate.

Eye candy

The next sweep through the Jungle is my favorite—adding the functional things and eye candy (gratuitous gadgets just to catch the player's eye) that make the player say "Cool!" These include all the anti-player gizmos, which give me the added pleasure of thinking how the player will be tricked and dashed by the level's treachery. The Jungle Pass, unfortunately, offers few opportunities for machines and contraptions of that nature—er, anti-nature. The environment does, however, offer places for traps like rising guard-stations that lift and spin a Sniper up and into the cover of a palm tree. There are lots of cool spots for ambushing traps like turrets and security guns. Another trap primed for jungle usage is the hip-hop obstacle course. The jungle offers ample situations for natural eye candy like collapsing catwalks, crushing avalanches, waterfalls, tightropes, tiger pits, and quicksand…so little industry, yet so much opportunity.

As a special note for moving things and eye candy, you must pay attention to the details very early in their design. You must be authentic because anything that moves in a level tends to enhance the player's focus on it—which is exactly why it's there—but be careful of this magnification. If you make two or three falling rocks, spend the hours it takes to make them look natural and under the influence of real physics as they tumble. Go out and roll a few round rocks down an incline and watch how their movement changes during the roll and when they come to rest at the bottom.



Levelord is a blur during crunch time.

Character placement, tuning, and tweaking

Your penultimate sweeps through your level are for final honing. Most, if not all, of your world brushes and entities are in place. You can now do your final lighting. I also usually wait until now to do my character placement, though it seems fundamental and as if it should've come earlier. This includes placing goodies and power-ups and such, too.

The final sweeps toward perfection.

Although most of these placements have been done in my head or on paper already, it's best to wait for the near-final brush placement. Too often I have spent hours—nay, days—on character/goodies placement only to have to rip them out due to frame rate or level redesign or some other brush-related issue.

The final sweeps through your level are strictly for play-testing and tweaking. As a good estimate, professionals probably play-test each level at least 10 to 20 percent of its development life. Again, this is the time when very little is actually changed in the level; things are only confirmed and reconfirmed. Get friends to help, especially if it's a death-match level. Have an open ear for any and all criticism; ego is a truly debilitating yoke, trust me. The most important rule is to have fun. No truly gifted level designer cares too much about the fame or fortune of the job. They only want to design levels. ■

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Broadband, baby! YEAH!

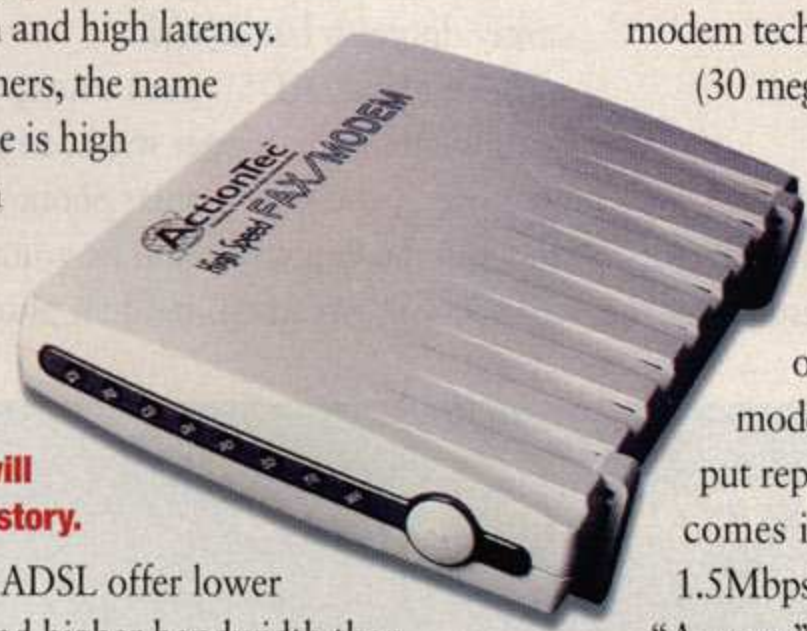
By David Gerding

The future of high-speed Internet access

Five years ago, few gamers considered a modem compulsory gear. Today, the best gaming experiences require them. And it may be hard to believe, but the modem in your computer is the last of a dying breed. Even the new V.90 spec, the one that unifies the competing 56K standards, is the last of the mainstream analog-modem solutions. Looking forward, a trio of higher-speed, all-digital connections await: Integrated Services Digital Network (ISDN), cable modems, and Asymmetric Digital Subscriber Line (ADSL). In three to five years, the analog modem may well be history.

What ISDN, cable, and ADSL connections have in common is that they establish a purely digital connection with other PCs and servers. In contrast, today's analog modems are limited because they must convert the bits being sent by your PC into signals that can travel traditional phone lines, then they must convert the signals they receive into bits your PC handles. It's a messy process, and the result is limited bandwidth and high latency.

For gamers, the name of the game is high bandwidth and low latency. ISDN, cable, and ADSL offer lower latencies and higher bandwidth than traditional modems. A file that takes 5 minutes to download over a 28.8 modem connection would take a little under 2 minutes to download on ISDN, and only 8 seconds on a cable modem. Get one of these high-speed connections, and that Quake II server where you got an unplayable 400 ping with spikes galore via modem is now silky smooth, with an oh-so-lovely 5 ping.



56K modems will soon be history.

The trouble is, these digital pipes are so cutting-edge that, depending on where you live, actually getting them installed in your home can vary from difficult to impossible.

Which One?

We looked at all three of these digital pipelines through the eyes of the gamer, gauging technology, cost, installation woes, and availability. Each of these technologies requires a technician to come to your house and install the line and sometimes—horrors!—install hardware and software on your PC while you sit on your hands and hope they don't screw anything up. And be prepared to pay more, too—all of these solutions cost more than the $20-per-month standard dial-up line and $100 modem.

Cable Modems

Pros

- Highest bandwidth
- Affordable, consumer-friendly

Cons

- Limited availability
- Shared (meaning *variable*) bandwidth
- No ISP choice

The Tech

Cable modems offer the fastest connections available to consumers today. In theory, cable-modem technology can deliver up to 30Mbps (30 megabits per second). In practice, typical head ends and cable modems today seem to be configured to deliver between 1.5Mbps and 3Mbps. In an informal survey of friends and family with cable-modem service, the maximum throughput reported was 150K per second, which comes in toward the lower end of the 1.5Mbps to 3Mbps expected performance. "Average" connections ranged from 450Kbps to about 1Mbps (1,000Kbps). By comparison, V.90 modems can achieve a maximum throughput of 56Kbps, though average connections are in the 40s. Basically, cable rocks.

Cable-modem networks use standard cable-television lines to deliver high-speed Internet access. Called HFC, for Hybrid Fiber Coaxial, the cable companies use fiber-optic lines to deliver content to a "node" near your neighborhood, which in turn transmits data to your house on the same coaxial cable that carries your cable-television signal. (In fact, you can continue to receive full cable-television service without affecting your Internet connection on the same line. The cable-modem occupies a single TV-channel's worth of bandwidth.)

Once in your house, the cable is attached to a cable modem, typically provided by the company, and then from the modem to a standard Ethernet Network Interface Card (NIC) in your PC. A cable-modem connection to the Internet is an "always on" connection—you don't *log* on, you *are* on.

Proponents of the major competitor to cable modems—ADSL and other DSL technology—have tried to make an issue of the fact that a cable-modem connection is, in essence, a shared line. You share the 1.5Mbps to 3Mbps capacity with all the neighbors on your node. The concern is that as more users log on, your bandwidth will drop precipitously. The cable industry's own tests suggest that the system can support up to 200 concurrent users per node without detectable performance changes if the users are Web surfing. If those users are downloading big files, which takes considerably more bandwidth, that number likely becomes much smaller. Cable companies are expected to place 500 to 1,500 homes on a node, so be aware that over the long term, the DSL proponents may have a point about shared bandwidth. In the near term, however, a cable modem remains the best choice.

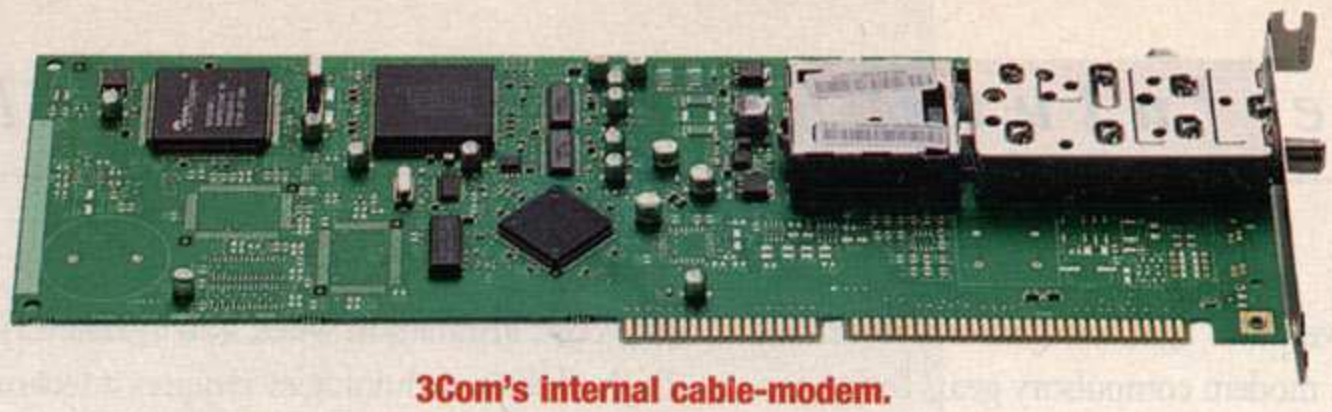
AT&T's pending acquisition of cable giant TCI is also a vote of confidence for cable-based Internet access. When a company with a long history of copper-based communication tosses its hat in a different ring, something's up. If the merger goes through, it should not only accelerate the rate at which we can all get our hands on cable-based access, but also goose the telcos to actually follow through and deliver on ADSL. Either way, games are going broadband—it's just a matter of time.

3Com's external cable-modem.

The Installation

Getting a cable connection installed is somewhat involved, though less so than ADSL and

ISDN since a technician does all the work for you. Typically, they come out and check the cable line running into your house. (If you need to install that line, it might take two visits to get up and running.) They then attach a company-provided cable modem to the line, and the modem is in turn connected to an Ethernet card in your PC. If you don't have an Ethernet card, they'll likely offer to sell you one on the spot for around $65. The technician does all the installation, including configuring your PC to support the new connection. Voilà. You're installed—and the envy of your modem-sporting friends.



3Com's internal cable-modem.

The Costs

Monthly subscription prices range from $35 to $55, depending on your cable company and where you live. Cable-modem rental is typically included in this fee. The installation fee ranges from $99 to $175, though if you sign up when the service first hits your area, you may get it at lower cost or for free.

The Reality

There are already over a quarter-million cable-based Internet users in the US, and that number is growing very quickly. While ADSL is barely past the vaporware stage, cable Internet services like @Home and Road Runner are up and running, and even courting us humble gamers. @Home has partnered with online-gaming service HEAT.net. The company promises to locate game servers directly on @Home's high-speed network, resulting in the fastest gameplay available with an average latency of 30 milliseconds to 60ms, compared with 170ms to up to 400ms for modem-based play.

While ADSL is an intriguing technology, cable modems are here today. Industry analysts expect over 4 million cable-based Internet users by 2001, while less than half as many ADSL connections are expected to be in place. If you want to play broadband today, your best bet is cable—if it's available in your area.

ADSL

Pros

- A dedicated line. In theory, no bandwidth sharing

Cons

- Expensive
- Extremely limited availability
- No ISP choice

The Tech

Asymmetric Digital Subscriber Line, or ADSL, is the result of the phone companies' research into delivering video via the standard copper-wire phone lines already in people's homes. Pundits said it couldn't be done—but they were wrong. "Standard" ADSL delivers between 128Kbps and 1.5Mbps over standard copper wires.

The main technical problem with ADSL is that the bandwidth is highly dependent on your distance from a telephone "central office," or CO. In theory, ADSL can transmit at rates of up to 1.5Mbps for distances of about 3.4 miles from a CO and up to 8Mbps for distances up to 2.7 miles. In practice, most ADSL installations will result in the 128K to 1.5Mbps range, depending on the service you've ordered.

The other major challenge with ADSL is making sure that your local lines can actually support it. Because ADSL uses the older copper wiring and depends on the wiring in your house, subtle line-noise problems can significantly diminish bandwidth.

Like cable, ADSL uses unexploited bandwidth in the copper wires, so you can continue to use your regular phone and fax machine on the same line as your Internet connection. An ADSL modem plugs into

Dial-up vs. Broadband Connections

TYPE	DOWNSTREAM BANDWIDTH	UPSTREAM BANDWIDTH	LATENCY	AVAILABILITY	COST
ANALOG MODEM	56Kbps	33.6Kbps	170ms–400ms	EVERYWHERE	LOW
ISDN	64Kbps or 128Kbps	64Kbps or 128Kbps	40ms–70ms	WIDE	HIGH
ADSL	128Kbps to 1.5Mbps (downstream)	64Kbps to 1Mbps	30ms–40ms	EXTREMELY LIMITED	HIGH
CABLE	1Mbps to 3Mbps (downstream)	—	30ms–40ms	LIMITED	MEDIUM

your phone jack on one end and an Ethernet card in your PC on the other.

The main technical advantage to an ADSL line is that, unlike with cable connections, you don't share the 1.5Mbps bandwidth with your neighbors. In reality, however, back at the phone company, your line is amalgamated with other ADSL connections—as many as 100. This still beats the line-sharing ratios expected in cable modems, but like any technology, ADSL has its hidden flaws.

The Installation

Installation typically requires two house calls. On the first, they check your lines to make sure they'll support ADSL. On the second, they connect the ADSL modem, network card, and software. Like cable, ADSL is an "always on" connection to the Net—there's no need to dial in.

The Costs

The technology has been primarily aimed at businesses, with one Northern California vendor offering service at $55 per month for 128K access, $70 for 384K, and $200 for 1.1Mbps. A recent consumer-oriented Ameritech trial offered unlimited service for $49.95 a month and $150 installation. You can expect it to be somewhat more expensive but still competitively priced compared to cable. As with cable, your ADSL provider becomes your Internet provider.

The Reality

If ADSL is offered affordably in your area, and the phone company can guarantee you the bandwidth you're looking for at a reasonable price, ADSL is a great way to connect to the Net, and chances are better that your neighbor's Web surfing won't step on your bandwidth. Moreover, phone companies typically have a better reputation for technically oriented customer service than do cable companies.

Unfortunately, ADSL is still a very immature technology. Some standards issues remain unsettled and deployment is likely to remain anemic, making the odds of an ADSL connection in your neighborhood very, very slim. In the long term, ADSL—or even its faster, next-generation sibling, VDS—may prove a better choice than cable; but for now, ADSL is a second choice.

At the time of this writing, there are trials in 29 states; usually that means in one or two towns per state.

To get Cable:

@Home Network—www.athome.net
Jones Internet Channel—www.digitalempire.com/
Rogers Wave (Canada)—www.rogerswave.ca/
Time Warner's Road Runner—www.timewarnercable.com/
MediaOne Express—www.mediaone.com/

To get ADSL:

Call your local phone company; also check out "deployments" section at www.adsl.com.

To get ISDN:

You can get ISDN access in your area by calling your phone company or hitting www.microsoft.com/windows/getisdn/.

ISDN

Pros

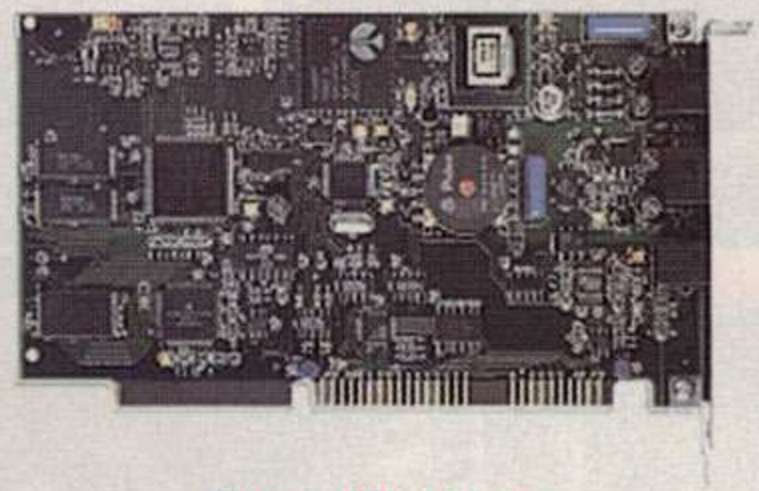
- Widely available
- Choose your own ISP

Cons

- Relatively low bandwidth
- Pricey
- Less consumer-friendly
- ISP-dependent

The Tech

Unlike cable or ADSL solutions, ISDN is a digital phone-line that uses a number, so you still dial in to an Internet service provider. Because the lines are digital, connecting is a nearly instantaneous affair. ISDN offers two "channels," or lines, each capable of true two-way 64K bandwidth. Better yet, these channels can "bind," delivering a 128K data hose—about three times the capacity of the typical 56K connection.



Zoom's ISDN adapter.

The Installation

Getting an ISDN line installed these days is much easier than it used to be. ISDN's availability is wider than both cable's and ADSL's. Typically, the phone company visits and installs the line. From there, it's up to you to purchase an ISDN adapter and install it.

The Costs

You can buy ISDN adapters at your local computer store for slightly under $200. Installation of the line itself can run from $50 to $200, depending on your location. Your monthly line charges will be in the $30 to $40 range, and you have to pay separately for your ISP connection, which is usually between $25 and $50 per month. So your total monthly costs are $55 to $90, but you have the advantage of having two phone lines to use when you're offline.

The Reality

ISDN is the best choice when ADSL and cable aren't available. You pay more than you would for a standard phone connection—but the dual-line capacity of the ISDN gives you more options. ISDN is more widely available than the other two options, but with cable access gaining ground, make sure you don't sink too much into ISDN just before cable arrives in your area.

In a Nutshell

If it's available in your area, your best bet is almost always going to be cable. While ADSL may ultimately offer some technical advantages, at this point it's practically unavailable and is almost always prohibitively expensive. ISDN is the fallback solution for gamers who can't get either cable access or ADSL.

The sad fact is that, depending on your location, you may not be able to get any of them today.

But chances are, at least one of these solutions will be available in your area very soon. It's time to prepare. ■

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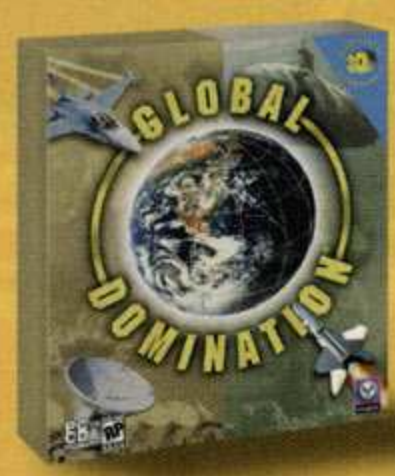

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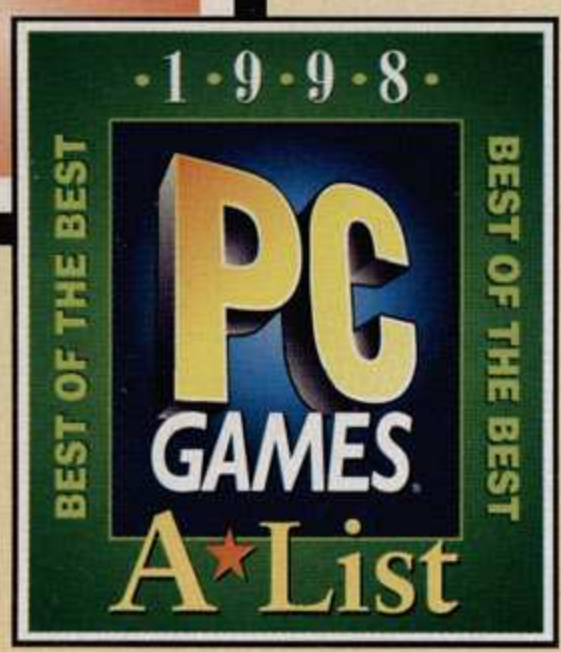

Making the *PC Games* A-List is the ultimate honor. If it appears here, the game's not just good, it *rocks*. For the complete rundown of every title that's aced its exam, visit www.pcgames.com/A-list.

THIS MONTH

Name	Section	Publisher
The Operational Art of War	GOM	TalonSoft
Incoming	Game Shorts	Xicat
Mortal Kombat 4	Game Shorts	Midway
Ultimate Archives Strategy Set	End Game	Interplay
Starcraft: Insurrection	End Game	Aztech New Media
Incubation: The Wilderness Missions	End Game	Electronic Arts
Seven Kingdoms: Ancient Adversaries	End Game	Electronic Arts

PREVIOUSLY

Name	Issue Reviewed	Publisher
Unreal	(September '98)	GT Interactive
Descent: Freespace	(September '98)	Interplay
X-COM: Interceptor	(September '98)	MicroProse
Independence War	(September '98)	Infogrames
HardBall 6	(September '98)	Accolade
World Cup 98	(September '98)	Electronic Arts
Warhammer: Dark Omen	(September '98)	Electronic Arts
Addiction Pinball	(September '98)	MicroProse
Strat-O-Matic 3.0	(September '98)	Strat-O-Matic Game Co.
Comanche Gold	(September '98)	NovaLogic
Dungeon Keeper Gold	(September '98)	Electronic Arts

WHAT WE'RE PLAYING

The bank-busting SiN demo's got us glued to the screen, but we're also enjoying the weird worlds of these recent releases.

1. SiN demo
2. Unreal
3. TA: Battle Tactics
4. Final Fantasy VII
5. Heart of Darkness

HOW WE RATE GAMES

Here at *PC Games* we use a letter-grade system to rate games. Everyone knows what our grades mean without needing an in-depth explanation or clever chart: an A+ is the best score possible and an F is a complete bust. To give you a better feel for the overall quality of a title, we rate each game in six key areas. We also select a Game of the Month for each issue. We review games when and only when the makers say they're ready for review.

GAME of the MONTH: The *PC Games* Game of the Month is the one title among the month's releases that stands out from the rest. While it's generally the best overall game of the month, a game will occasionally warrant this honor not because it's the highest-rated game in the issue, but because it's a standout in one or more areas.

GAMEPLAY: In a nutshell, how much fun is it to play? This takes into account the quality of the game's interface and control scheme, and is weighted more heavily than other ratings in the overall grade.

GETTING STARTED: How much reading, studying, and hardware-tweaking are required before you can start to have fun? (The less the better.)

GRAPHICS: How advanced and attractive are the game's visual elements, and how well do they serve the game? If a game's 3D-accelerated graphics are significantly different than its standard look, we offer separate grades.

MULTIPLAYER: How much value will you get from the game's multiplayer element, if there is one? (N/A = not available) This rating takes into account ease of multiplayer setup.

SOUND CHECK: How good are the game's sounds and musical score, and how well do they serve the game?

OVERALL GRADE: All in all, how strongly do we recommend the game for purchase?

THE X FILES GAME

GIVEAWAY

This is it—the contest would-be Scullys and Mulders have been waiting for! Be one of eight lucky winners, and you'll get everything you need to immerse yourself in investigations of the weird and paranormal.

One supernaturally gifted grand-prize winner will get a copy of The X-Files Game signed by none other than Gillian Anderson, *The X-Files'* awesome Dana Scully. A rare treasure, to be sure, but that's not all: there's also a Nokia cellular phone—*and* a complete collection of *The X-Files* home videos! To top it off, we're tossing in a *PC Games* T-shirt and a one-year subscription to the magazine!

It's this simple: Just write your full name, address, and daytime phone number (and an email address if you have one) on a 3-by-5 card and mail it to **PC Games, Attn: X-Files Contest, 501 2nd St., Suite 500, San Francisco, CA 94107**. (Only one entry per person, please. For complete contest rules, see page 141.) Entries must be received by November 1, 1998, to be eligible to win. Be one of the few in the top-secret network of underground prize-winners—enter today!

YOU CAN WIN:

GRAND PRIZE (1)

- A copy of The X-Files Game autographed by Gillian Anderson
- A Nokia cellular phone
- A complete set of *The X-Files* home videos
- A *PC Games* T-shirt and a one-year subscription

FIRST PRIZE (2)

- A Nokia cellular phone
- A copy of The X-Files Game
- A complete set of *The X-Files* home videos
- A *PC Games* T-shirt

RUNNERS-UP (5)

- A copy of The X-Files Game
- A *PC Games* T-shirt

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The Lionhead Diaries, Part IV

Last month we jumped ahead to Black & White's E³ unveiling. This month we pick up director Steve Jackson's chronicles as the development studio gets a logo—and gets sick.

I guess if you're in this business, such things are unavoidable. Lionhead had its first virus infection.

We'd set various people working on the company logo: a professional graphic-design company; a talented artist friendly with one of our programmers; even an artist from *2000AD* (a weekly British comic, famous for its Judge Dredd character). In the end, we all agreed that the best lion head had been drawn by Evie McLaughlin, a house-bound mother who had created the Bullfrog logo. Delighted that we'd chosen her design, Evie hurried round with floppies containing the logo in different formats. These quickly circulated round the office as we all began creating Lionhead stationery and screen savers. Unfortunately, these floppies were plague-carriers.

A virus didn't slow down work on Lionhead's Black & White.

Everyone froze as a *Star Trek* "red alert" Klaxon bellowed out from Mark Webley's speakers. "Shit! It's a virus!" "Which one?" "What does it do?" Having never caught a virus before, I was terrified. Would eight weeks' work disappear as the thing zipped around the network erasing our hard drives? We crowded round Mark's machine. Luckily, he'd installed ThunderBYTE Anti Virus, which had caught and killed the bug. Tim downloaded a shareware version of TBAV, installed it on everyone's PCs, and the rest of us cleaned up, too. We'd lost an afternoon's work inoculating our machines. But, thankfully, no harm seemed to have been done.

Don Juan and the Radical

Two new people had arrived this month. Both were members of the Dungeon Keeper team who'd left Bullfrog and took time off to travel.

Jonty Barnes is an energetic eager-beaver who will be in charge of the game's artificial intelligence routines. He has also developed something of a reputation as the Lionhead stud. Jonty tells us about the endless line of young ladies queuing up to stay at his flat. We listen and tease him. Secretly, we're green with envy.

One of Jonty's first tasks at Lionhead was to develop a "wall-hugging routine" that calculates the shortest distance from A to B through a maze of walls. When he finished, he challenged Peter to a bet: If Peter could make the wall-hugging program crash, Jonty would buy him a copy of Final Fantasy VII. But if it stood the test, Peter had to pay for Jonty's copy.

Peter lost the bet.

The other newcomer was Mark Healey, our resident radical. No matter what time of day it is, Mark manages to look like he's just gotten out of bed. Two-tone hair, sneakers and T-shirts, rings through the nose, the lot… He often nips over to Amsterdam for long weekends; I don't know why. He's a part-time rock guitarist/drummer, and his timekeeping in the office is hopeless. But he's a brilliant computer artist. About 95 percent of the Dungeon Keeper graphics came from Mark's mighty mouse.

Looking over his shoulder, I see a hilly landscape in various shades of turquoise. He clicks a button and the word "BLAH" appears from behind the hill in red and rises into the sky. Another click and it starts snowing. What is he *on*? Mark tells me he's learning to use 3D Studio Max.

Mark is into anything alternative. What might be "hippie bullshit" to the rest of us is, in Mark's eyes, simply an alternative view of reality. "Anyway," he'll insist angrily, "who's to say your reality is right? It's, like, just one of an infinite number of possible realities…"

The topics of conversation around the office flit from subject to subject that morning:

Mark W.: "Hey, Demis. Why did you call your Fantasy Football team Super Scum?"

Demis: "Well… It's a bloody good team. They're all super stars."

Tim: "Then how come you're doing so badly?"

Demis: "Because they're all scumbags. They're super. But they're scum. They're Super Scum…"

Peter: "Has anyone else noticed? Hasn't Monty got the most disgusting bum you've ever seen?" (Last year poor Monty, Peter's housekeeper's poodle, was treated for a prolapsed anus.)

Jonty: "Can we please talk about the semi-colon situation?"

This codiferous comment cut me out of the conversation. The others babbled unintelligibly for half an hour or so about when and where to use brackets, classes that are publicly derived, and who was the last person to check in.

The team is now complete. Back row, left to right: Steve Jackson, Mark Healey, Mark Webley. Front, left to right: Tim Rance, Demis Hassabis, Peter Molyneux, Jonty Barnes.

Time for me to get on with some real work.

NEXT MONTH:
The Friday tradition: Prove the worth of your existence.

GOT ANGER?

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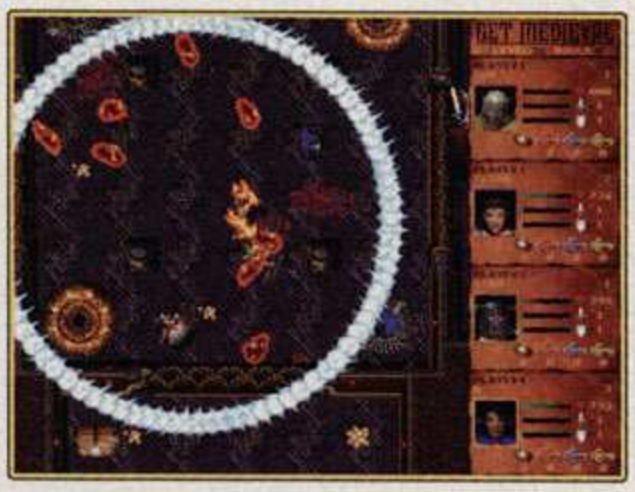

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EIDOS
INTERACTIVE

Homeworld

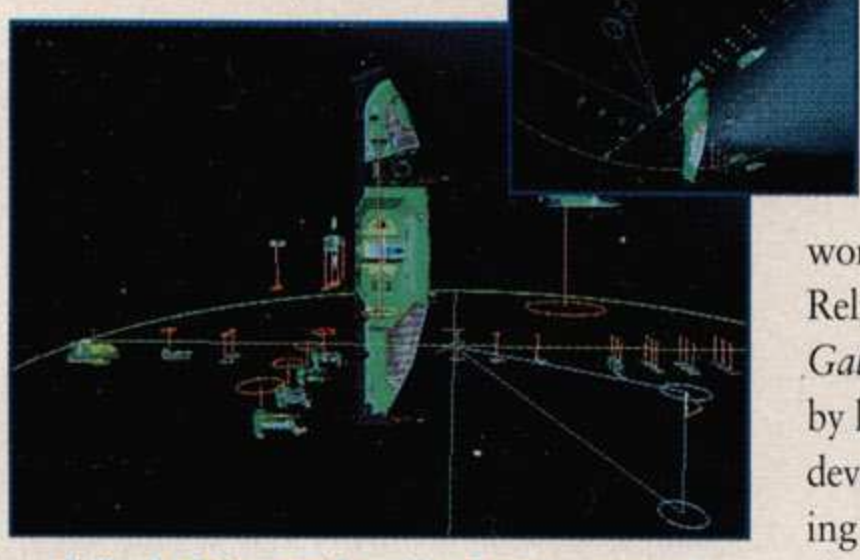
RTS heads in a bold new direction

By Chris Hudak

After a two-day mission to go where this previewer has never gone before—and repeated hard, sober, probing stares—I can still barely comprehend what I've seen: a real-time strategy game set in deep space.

The very concept is terrifying to any sensitive gamer. Imagine a game using a select-and-send scheme along the lines of C&C, then put the whole works into the empty, dark, endless void of open space, with its concomitant degrees of axial freedom stretching to apparent infinity in all directions. The RTSer's brain, raised on Warcraft and the like, just recoils in existential horror. "Where's the floor, man? Where's the floor?"

Use the floating game-camera's Zoom feature on a cluster of meaningless glowing dots in the distance, and suddenly you're able to read the registration numbers on the hulls of your starships. It's cool, dramatic, disorienting, freaky, and wrong. And yet, somehow, it works—beautifully.



A fleet at the mothership: The movement interface shows what plane your fleet's on, and the blue lines indicate where you're moving the interceptor. Inset is the same view rotated and zoomed in.

The key is the wonderfully implemented interfaces and mouse-controlled method of camera rotation/zoom around the currently selected ship or ships (C&C-style health bars and all giving the bewildered fleet commander at least some sense of the familiar). Get your fleet too scattered or lose your mental place in the overall spatial situation, and a quick, radical zoom-out or a look at the Tactical Overlay should bring everything nicely into a cohesive picture. Once you get the general mental hologram of the spread of your forces (and the enemy's), you can select a ship and hit a hotkey to center your view on it, then adjust the camera position to keep enemy forces in your sights. One click of the mouse designates your forces' destination on the horizontal axis, and a second determines movements on the vertical axis. Imagine coordinating your attacks so that one fleet arrives from above the enemy, while the other attacks from below.

Homeworld is more than innovative technology. It tells the epic tale of a people banished to the nether regions of space. Their alien aggressors have systematically killed off all cultural and spiritual leaders, leaving them suffering what Relic CEO Alex Garden calls a sort of "cultural amnesia." Left with one artifact—a crystal that receives a signal from their former home—they now blaze a transgalactic, generation-spanning trail through deepest unknown space toward their beckoning homeworld. (This is indeed a "rag-tag fleet," and Relic makes no apologies for any *Battlestar Galactica* flavor.) Their missions are haunted by lingering half-mythical tales of an ancient device harnessing untold powers. The unfolding story involves the journey home; along the way you'll find you're not alone—there are traders and three races of pirates, with various subplots involving those groups.

This game has a flair for the dramatic. When you complete your commands and sit back, your selected ships (whose color you can choose) go roaring off toward their targets, their star drives pluming glowing trails of exhaust. Position the camera properly and your ships come barreling toward and past you, the thunder and howl of their engines Doppler-shifting as they recede into the distance. Squadrons of deep-space fighter planes docked up under the wings of a carrier ship disengage one by one and peel off toward the combat zone. All the while, ramjet "collectors" scour the nearby clouds of nebular dust, gas, and debris (modeled clouds that have their own gaseous, 3D substance), scooping up resources and bringing them back to your mothership so you can build more fighters and research stations.

These nimble fighters, while fragile, are a nightmare in combat.

The battles are almost indescribably beautiful. You don't hop into a ship and man its controls. Rather, you designate your target, set one of six formations for your fleet, and zoom and rotate in, out, and all around to get a good view of your fighters, interceptors, and bombers performing maneuvers that would make any pilot proud: Immelmens and Split-Ses and rolls and banks.

Homeworld is chock-full of hipness, gameplay value, and sheer, dreamy good looks. It's one of the few radically different games you'll see, the next step in the RTS genre. Let the gamer beware: There's lots of space to get lost in. We'll help you stay on course with expanded, exclusive coverage next month.

HOMEWORLD

Developer:	Relic Entertainment
Publisher:	Sierra On-Line
Web:	www.sierra.com
Available:	November 1998

SimCity 3000

Urban renewal

By Peter Olafson

Before we get into how SimCity 3000 is shaping up, it might be useful to mention how it isn't. That is to say, the third entry in the celebrated urban-simulation series (it's sold more than 5 million copies worldwide) is no longer a 3D game.

SC3K did begin life in first-person perspective. While you couldn't actually walk around your city, you could move a camera through the game world—right down to street level if you wanted—and pan around. But late last year, the developers realized they'd bitten off more than the average gamer's PC could chew and recast their goals accordingly. SC3K would preserve the Godlike angled-down view of 1993's SC2K, but with greater detail and a greater sense of intimacy.

Sure enough, the current build of SC3K, rather than spinning off from Maxis' recent you-are-there 3D sims, finds the game returning to its roots. I tested out a pair of pre-alpha versions over several days, and they looked and played (to the extent that they could be played) much like bigger, brawnier versions of SC2K.

You choose a sum with which to start the game ($100,000 to Swiss Bank Account), a region (West Coast US to Tropical Island), a goal (No Pets!), a difficulty level (up to Puppet Master), and city size (128-by-128 or 256-by-256). Then, using a series of side-of-the-screen icons, you lay out residential, commercial, and industrial zones—with three densities for each—on maps four times the size of SC2K's. You supply roads, power, and a wide range of city services...and the little SimCitizens will go out and gratefully build the city you've so kindly facilitated.

Midtown Manhattan...with plenty of room for growth.

However, I'm afraid I can't give you a full sense of the SC3K experience. The game isn't expected in stores until November, and my version was missing this, that, and the other. For instance, the citizens in SC3K are expected to be more than usually active participants in shaping their cities, petitioning the player for things like stadiums and shopping malls—the need for which was conveyed more abstractly in earlier games. Buildings will be more interactive—you'll be able to personally dispatch fire trucks, for instance—but they weren't yet, in this build. And while you'll hear from neighboring cities as well, I didn't.

Check out the detail here—not just the fire, but the soldiers tromping around the military base.

Multiplay? Nope. But SC3K is expected to maintain an online presence via **www.simcity.com**, a Web vehicle where players can share knowledge, publish their creations, and take part in contests.

That said, the game's essential look *was* in place, and it looks just fine. The structures—ranging from unique monuments to riverside mansions to glass-and-steel towers—are all rendered and bring a new level of detail to SC3K. There are so many of them, and they're so varied, that I never had a sense of the game repeating itself.

Now, if you're concerned that SC3K will sacrifice intimacy without 3D, note that you can zoom in so far that the side of a skyscraper will take up much of the play field. This is roughly the equivalent of peering out a 10th-story window.

And if you don't like that particular skyscraper, you can cobble together one of your own. The new Building Architect Tool—an intuitive, building-block–based editor with four views and a wide selection of data sets to mix and match—was working. (Note: The real-world commercial buildings Maxis was thinking of including will now more likely take the form of an add-on.)

Of course, the pleasure in the SimCities is as much in watching as doing: Even before SimAnt, it was a virtual ant farm. Now there are your mundane passers-by, and proud parents are already exhibiting stroller-clustering behavior. Soldiers in and around a military base can be found kissing the pavement to give Sarge 30, too.

SC3K has a good ways to go before we can properly evaluate its progress. But as a graduate of the demanding Streets of SimCity, I suspect the instinct to drop 3D in favor of a familiar view was sound. And SimCity 3000 already has a look I want to know better.

SIMCITY 3000

- **Developer:** Maxis
- **Publisher:** Electronic Arts
- **Web:** www.simcity.com
- **Available:** November 1998

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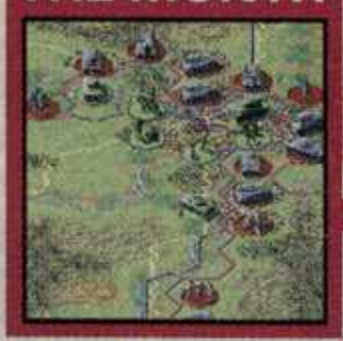
GAME OF THE MONTH



The Operational Art of War I

Above and beyond the call of duty

By Marc Dultz

Noted game designer/developer Norm Koger has been turning out computer wargames for what seems like an eternity, producing a stable of eminently playable designs that have earned him the respect and admiration of wargamers the world over. In The Operational Art of War: Volume I, 1939–1955, Norm has done himself and the hobby one better, crafting not only his finest wargame to date but perhaps one of the greatest turn-based wargames ever.

View the battlefield from a 3D or 2D (top) perspective.

TOAOW addresses the vague scale of battle known as operational level combat, which, for lack of a better definition, encompasses military actions fought anywhere from the company level up through the echelons of command to whole corps. As such, the map scales for each of the game's 17 historical battles differ markedly, with hexes measuring anywhere from only 2.5 kilometers across to as much as 50 kilometers. Likewise, the elapsed game time and duration of each conflict vary—in some instances, the typical turn takes place over a half-day, while in others an entire week passes.

Virtually every dimension of modern military combat has been thoroughly researched and thoughtfully depicted, taking into account the many different troop types and weapons fielded by every significant major and minor power from 1939 to 1955. Although the crux of the game is ground combat, several supporting services are also portrayed, ranging from tactical air power to naval forces. Amphibious invasions, air assaults, and guerrilla operations are also represented. Even the use of nuclear, biological, and chemical agents (NBC)—including gas and atomic explosions—can be initiated, depending, of course, upon scenario parameters, repercussions, and risk of escalating use. NBC employment is usually time-dependent or triggered when a specified event occurs.

A wide variety of logistical and combat-related factors are intelligently portrayed, covering everything from supplies to initiative levels to transit modes to unit-deployment options. Units can attack individually, in concert with other units in their stack, or in league with other nearby units, which can all be closely scrutinized with the aid of the attack planner. Weather, unit specialization, troop quality and proficiency, and other factors are all depicted in exquisite detail.

You can view the battlefield from either a 2D overhead or 3D isometric perspective as well as via a handy zoom-mode. The traditional 2D view features clearly marked unit counters decorated with standard NATO symbology. The elegant 3D perspective employs oversized miniatures to depict each type of combat formation. In both views, unit information is graphically displayed in a separate unit panel (the micro-miniatures in the pane look like those in TalonSoft's East Front). The interface takes some getting used to, but once you've mastered the mechanics of play and the myriad options, TOAOW is a delight.

The attack planner shows each assault group and its intended avenue of approach, *plus* any assigned units supporting the attack.

Nevertheless, there are some minor annoyances: Although the game ships with a full-featured scenario editor, there are no campaigns and only 17 predesigned scenarios covering everything from WWII to Korea to Israel's War of Independence to a hypothetical confrontation in Europe between NATO and the Warsaw Pact.

Simply put, The Operational Art of War is as much a triumph of the will as of the human spirit, the culmination of years of painstaking research, detailed analysis, and dedication to the pursuit of excellence. It will undoubtedly serve as the benchmark for future computer wargame designs.

OPERATIONAL ART OF WAR I

GAMEPLAY:	A-
GETTING STARTED:	B+
GRAPHICS:	A-
MULTIPLAYER:	B+
SOUND CHECK:	A-

A- OVERALL

One of the finest wargames ever published.

DEVELOPER:	Norm Koger
PUBLISHER:	TalonSoft 800-211-6504
WEB:	www.talonsoft.com
REQUIRES:	P133, 16MB RAM, 74MB HD, 16-bit SVGA, 4x CD-ROM drive
RECOMMENDED:	P166, 32MB RAM, 8x CD-ROM drive
STREET PRICE:	$40

TIPS ▼ If it looks like it'll take a unit more than a turn to reach the front lines, consider having it move by rail instead of by road or across country. It's less likely to suffer from mechanical breakdowns (especially armored units) and will stand a much better chance of reaching the front intact and ready to fight at full strength. ▼ Always garrison important rear areas, especially if the enemy has the ability to airdrop units or invade a coastline. A single larger unit can be broken down into several smaller formations, which can then be dispersed to critical victory-point sites.

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Urban Assault

City on fire

By Daniel Morris

Despite its flaws, Urban Assault is a serious next step for the action-strategy revolution that Armor Command, Uprising, and Battlezone began. Combining the best elements of real-time strategy and first-person action, this game will end up being fondly recalled (the way Dune 2 is now) as one that helped set the bar for a great new genre.

UA was created by three East German gamers who, just days after the Berlin Wall came crashing down, went West to buy Amigas so they could learn to program. When they had a UA prototype, they cornered Microsoft reps at a trade show and showed it to them on a laptop. Microsoft signed them up and has since put nice wrappings around what is a compelling yet sometimes kludgy game.

The setting is 2017 on a ravaged Earth, where the human survivors of an ecological disaster ("The Big Mistake") have formed three warring factions. The Resistance (that's you), the Ghorkovs, and the Taerkasts wage war through robotized armies fueled by plasma energy, and their success or failure is determined by a single human being who undergoes upload surgery and becomes a living, computerized commander/resource manager.

Capture unclaimed zones to increase your energy consumption.

You begin leading the Resistance just as two new forces enter the fray—alien races determined to pick Earth's carcass clean. Often you'll fight against more than one enemy in a single mission.

The real kick of Urban Assault is jumping into any of your vehicles and leading the 3D combat. The impressive selection of war machines—each of the five factions has its own variation on jeeps, tanks, probes, helicopters, jets, and even Zeppelins—varies in speed, firepower, shielding, and cost. You'll learn how to maintain a steady supply of energy so you can create new units (they appear instantly) and arrange your vehicles into squadrons to give them orders, destinations, and aggression settings.

Massed tanks in an open area? Recipe for disaster.

Such variety adds depth and richness to the combat—which is definitely tilted in favor of units under your control—and keeps the action fresh throughout the 30 nonlinear missions. The mission-selection screen resembles a Risk map; conquer one territory and adjacent missions become available.

Urban Assault also shines in multiplay, with almost no noticeable lag over the Internet. The action unfolds more methodically than in most action games, but the pace is quicker than in most RTS games, so you won't be battling in one game for hours on end. The result is an entertaining blend of armchair general and in-the-trenches grunt.

Urban Assault's biggest hurdle is its learning curve. It's very tough to pick up, even with the three training missions. Early discouragement is almost assured, as there seem to be just too many options and features and too little time to master them before getting clobbered by the relentless enemy. Even when you have the interface and its features down cold, it's a very challenging game—and there are no difficulty settings. But it's worth sticking with for its addictive gameplay.

A host of irritants—control difficulties with certain vehicles (why can't helicopters hover in one place?), occasional AI oddities, and the inability to access the control-config screen from within a mission or choose the same faction as your opponent in multiplay—detract from what is otherwise a rich game. Good (albeit boxy) graphics, atmospheric music from *X-Files* maestro Mark Snow, and inventive design make Urban Assault a strong package for action *and* strategy fans.

URBAN ASSAULT

GAMEPLAY:	B
GETTING STARTED:	C-
GRAPHICS:	B
3D ACCELERATED:	B+
MULTIPLAYER:	B+
SOUND CHECK:	B

B- OVERALL

Demanding yet rewarding.

DEVELOPER:	Terratools
PUBLISHER:	Microsoft 800-426-9400
WEB:	www.microsoft.com/games/
REQUIRES:	P133, 80MB HD, 16MB RAM, 4x CD-ROM drive
RECOMMENDED:	32MB RAM, D3D card, force-feedback joystick
STREET PRICE:	$55

TIPS ▼ The more turf you control, the more energy your power station produces. When a mission starts, immediately send a tank or two off into uncharted zones at Aggressiveness Level 4. They'll automatically capture territory. ▼ When you find the enemy Host Station, send a mixed squadron at it—go heavy on the tanks—and set its Aggressiveness Level to 2 so that it'll go directly to the station and start attacking. ▼ An effective tactic against incoming waves of helicopters: Arrange an anti-air tank squadron in the gaps between buildings. As the choppers pass over, the tanks can chop them up from relative safety. ▼ Send airborne strikes in two waves: first the attack wave, then another one a bit behind it. The trailers can engage any enemy units that want to get behind the raiding wave.

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Actual gameplay screen shot

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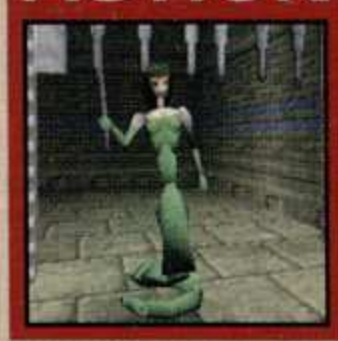

Deathtrap Dungeon

Room Raider

By Peter Olafson

Deathtrap Dungeon beats the PlayStation jinx: It's a significant improvement over the earlier, uglier console iteration of this third-person action/adventure. A judicious recasting for the PC has produced results which, while not exactly groundbreaking, are entirely pleasant nonetheless.

The game has its roots in Ian Livingstone's popular *Fighting Fantasy* novels, and a charming intro sets up the story nicely. You're a warrior—either Red Lotus, dressed in bikini chain-mail, or the chiseled Chain Dog—who has accepted Baron Sukumvit's challenge to take The Walk through the tyrant's private hell: 10 large, themed dungeon levels (the Circus, the Labyrinth, the Quarry, the Bellfree, the Sewer, etc.) brimming with nasty creatures and tight spots, with a formidable dragon at the bottom.

Red Lotus contemplates her choices: understudy to Lara Croft or a shapely stain on the pavement.

And so you're off, throwing levers, collecting keys, grabbing spells and potions, and whacking monsters. You can choose from a range of up to seven close-combat weapons (swords and hammers), as well as from six ranged weapons (muskets, flame lances), eight spells (including one featuring a little pig as a guided missile), and found supplies—all sharply handsome on a system using a 3D card.

The 50 monsters aren't exactly geniuses, but they give DD a lot of its flavor. They range from hooded, blue-faced dwarves who appear to be on loan from *Phantasm* and chortle just like Beavis and Butt-head, to clowns who stand on one leg, *Karate Kid*–style, and taunt you from a distance. Skeletons hold their heads in agony while being disassembled in a fashion that vividly recalls blowing leaves. It's all vaguely humorous but never silly, and as a result, DD artfully maintains its edge.

Heads roll—and bounce, and spin, and revolve—in Deathtrap Dungeon.

Developer Asylum Studios has fine-tuned the genre's basics in sensible ways. For instance, the Tomb Raiders occasionally adopt inconvenient camera-angles, and you're stuck with what the game gives you. Here, you can always switch to a semifunctional first-person view. Using chalk, you can mark for future reference a significant dungeon corner that looks much like every other dungeon corner, and you can switch characters in mid-game.

On the other hand, the hacking and slashing—while enjoyable—don't quite have the depth of, say, Die by the Sword's. You have five generic combat moves, and while many of your enemies obligingly spout blood and fall apart, I never had the sense that the kind of damage done corresponded to the mode of attack.

The game-saving system doesn't sacrifice gameplay to player convenience; it uses a series of judiciously spread-out save points—some that require payment using coins found within the game. The saves are named automatically (and unrevealingly), and the accompanying identifying graphics were unidentifiable glitches on one of my systems (using a Voodoo Rush–based card).

These weren't the only glitches. On the Circus level, I found myself taking damage through an intact wall from the flamethrowers in the room beyond and peering desperately into an apparent doorway that turned out to be simply a missing texture. And while the end-of-level T. Rex was talked up big-time in the prelevel briefing, I killed it easily at close range with a middling-strength sword while it relentlessly attacked the wall behind me.

Deathmatch-only multiplay is limited to eight on a LAN (how 1995). And from a pure enjoyment point of view, I wish DD had a greater sense of exploration and mystery, and less of trudging from one puzzle to the next.

Nevertheless, Deathtrap Dungeon's a solid, if not spectacular, addition to the TR canon and should keep fans of the genre well employed.

DEATHTRAP DUNGEON

GAMEPLAY:	B
GETTING STARTED:	B
GRAPHICS:	B+
MULTIPLAYER:	C-
SOUND CHECK:	C

B OVERALL

Straight-up dungeon-delving action; the console version done better.

PUBLISHER:	Eidos Interactive 800-617-8737
WEB:	www.eidosinteractive.com
REQUIRES:	P90, 16MB RAM, 120MB HD, SVGA, 4x CD-ROM drive
RECOMMENDED:	P133, 32MB RAM, 8x CD-ROM drive
STREET PRICE:	$50

TIPS ▼ The middle stage of the Circus level is tricky. First, run straight to the switch on the far wall and hit it to close the gate on the right, thus heading off combat with the snakewomen beyond. Backtrack and open the first rock-wall on the left after the entrance to find a nice cache of supplies. Use the Charm of Icy Cool as protection in the flamethrower room, and start running before the door's fully open to ensure you have time to make it back before it closes. Finally, you'll find the red key behind a secret door, in the passage leading to the top of the enclosure holding the Venom Sword.

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Heart of Darkness

For the old-school gamer in all of us

By Jason D'Aprile

Careful—the self-reproducing, fire-belching crocodile men think and shoot quickly.

They say everything old becomes new again, and the gaming industry seems intent on proving the adage true at every possible turn. In the case of Heart of Darkness, the venerable saying is appropriate simply due to the length of time this game was in development. Not to put too fine a point on it, but kids who were newborns when HOD began development are now starting school.

This isn't exactly a slam, since what HOD sets out to do, it does remarkably well. While the most recent game you could compare it to would be Oddworld, to really get a perspective on it, you have to reach back to Amazing Studio's previous creations—Out of This World and Flashback, two of my all-time favorite games. Heart of Darkness is essentially a 2D, side-scrolling action-puzzle game, and at times it seems to have been designed by absolute sadists. It's a rare combination—frustrating yet endearing. Bizarre, dark, and violent, yet cute, childish, and saccharine. It has a sort of Fraggle Rock in Hell quality to it.

You play Andy, a frolicking, frivolous youngster prone to falling asleep to the monotonous droning of his evil science teacher. Upon escaping her villainous wrath one day, Andy witnesses a solar eclipse, at which point his faithful best friend, his dog Whiskey, gets spirited away to a dark land of shadows. Andy, just as any other boy would, immediately tears off to his tree house, jump-starts his dimension-crossing spaceship, and sets off to bring Whiskey back alive.

The opening setup and conclusion are two of the game's biggest flaws: With five years' development time, a more insightful story would've been nice. Regardless, it's told in a beautifully cinematic way, with a wonderful score by composer Bruce Broughton. And the combination of childish whimsy and dark nightmares makes for a compelling brew.

The game itself is even more engaging, provided it isn't driving you to distraction due to the sheer difficulty of some of the scenes. Its gameplay feels exactly like Flashback's, and many of the scenes actually seem ripped from the aging classic.

The screen is oddly and annoyingly window-boxed (the screenshots shown here are cropped), and while the graphics are generally lush and attractive, they seem a bit muddy—especially the characters. Animation is superb and pinpoint-precise, though. When Andy is climbing a wall, his every step is perfectly choreographed; nothing is left out of place. Unfortunately, control seems so tied to the exacting animation that it often feels delayed and imprecise. Also, the game autosaves only at certain (albeit frequent) checkpoints, so you'll end up replaying parts.

Don't touch the spurting lava, or you'll be left with a well-done Andy.

These frustrations aside, it's obvious that a lot of work went into HOD, and there's much to like here. The game isn't very long (less than 10 hours of play time), but the cinematic qualities and graphical detail make it worth coming back to from time to time. And its design is far less obtuse than Oddworld's: the path is laid out for you here, even if the solutions aren't, so you're not always wondering whether you missed something important.

It's not for everyone, and its age is beginning to show, but Heart of Darkness still offers superb animation, music, graphics, and atmosphere.

Shadow spawn: ugly, greasy, and really bad hosts.

HEART OF DARKNESS

GAMEPLAY:	B-
GETTING STARTED:	B
GRAPHICS:	B+
MULTIPLAYER:	N/A
SOUND CHECK:	A

B OVERALL

It's a bit late, but this Flashback-style sidescroller is still worthy.

DEVELOPER:	Amazing Studio
PUBLISHER:	Interplay 800-468-3775
WEB:	www.heartofdarkness.com
REQUIRES:	486 DX2/66, 16MB RAM, 84MB HD, 2x CD-ROM drive
RECOMMENDED:	P90, 32MB RAM, 4x CD-ROM drive
STREET PRICE:	$50

TIPS ▼ Beware of any shadows you see, especially around tree limbs—they have a nasty habit of coming to life. ▼ Don't try to make jerky movements or run over precarious spots like chain bridges. Andy has a tendency to lose his balance that way. ▼ Remember that Andy always stands up to create a super shot, even when you want him to duck; so don't power up if there's incoming fire. ▼ Worms enjoy snacking down on the armored Ghost monsters that reproduce when you kill them. This can serve as an important distraction.

RedJack

Rolling with the moody boys

By Karen Eng

I've always wanted to be a pirate sailing the seas, pillaging, swashing buckles, setting things on fire...all the while belting "Yo ho, yo ho!" plastered on rum. RedJack: Revenge of the Brethren, CyberFlix's latest adventure/action hybrid, sweetly promised to hurl me toward this fate by my bootstraps, then dashed my hopes against the rocks.

You play Nick, a wide-eyed slacker kid living in the sleepy island village of Lizard's Point. One murky evening, you get the nagging feeling fate's conspiring against you. Shadowy black-robed assassins stalk you, while your would-be girlfriend, Elizabeth, threatens to repossess your house—unless you can get her lots of money, pronto. That same night, a pirate ship just *happens* to land, and its captain just *happens* to need another hand on deck. Guess who that's going to be?

Cannon practice produces deeply satisfying booming, splashing, and burning sounds.

From there, RJ starts feeling tedious.

First there's the navigation. I'd hoped that CyberFlix's touted DreamFactory 5.0 technology—which was supposed to allow greater freedom of movement—would let me run around a seamless 3D environment at will. Alas, while panning was definitely faster than in, say, Starship Titanic, I was still tied to the track—typical in a first-person adventure. The cursor pointed to where I could go—not very many places, incidentally. Worse, to get from A to B, I still had to hit a midpoint that landed me facing away from my destination.

Then there's RJ's script. Not to be unkind, but it's dumbed-down to the point of an extended *Scooby Doo* episode. (There's even a character named Shaggy!) It does have basic pirate-story elements: a brotherhood broken by treachery, sunken treasure, a buxom lass, even a sea monster. If everyone hadn't kept breaking character by spouting eighth-grade lines like "Bite me" and "I'm gonna kick some ass," I might've been able to overlook the actors' odd, swashbuckler-from-Louisiana accents and settle into the low-brow, cartoony drama.

I was relieved that when I clicked on characters, I didn't have to ask every single question in the box. Instead, each question gets its corresponding reply, plus (usually) a whole new set for the next query. This allows the game to change course, however slightly, increasing replayability and enhancing the illusion of self-determination.

Captain Justice glowers at you in his cabin.

RJ's graphics and animation quality fluctuates wildly. The skies drip impressive, gloomy, thunderous clouds, and towns at night sparkle jewel-like with warm lights. The cinematic cut-scenes are well-wrought, and characters make the darndest faces, with particularly amusing eyebrow movements.

But when you're moving around in the game, everything onscreen becomes pixelated, only to coalesce again after a lag of a second or two after you come to a halt. In many daytime environments, even solid objects all around you twitch and shift. Character animations in the game are jerky, too.

Graphics flaws mar RJ's only real treat, the action sequences. Battles are never exactly a surprise: your machine has to stop and load data before each conflict. Still, the arcade-like sword fights and shoot-outs are fast and challenging enough to be fun, even for a point-and-clicker like me. Unfortunately, the lagging combat-controls and pixelated, transparent moving objects make for increasingly inaccurate blows as the action accelerates.

Blackbeard's mining-car: a roller coaster with guns. You have to stop to shoot, though.

In the end, RJ's failure to do any one thing excellently keeps it from being the deeply involving pirate experience it might have been. Experienced adventurers will find it shallow and unrewarding, though its something-for-everyone quality might appeal to families. But here's betting even families would feel more immersed riding a slow boat in Pirates of the Caribbean.

REDJACK

GAMEPLAY:	C+
GETTING STARTED:	A
GRAPHICS:	C-
MULTIPLAYER:	N/A
SOUND CHECK:	B+

C- OVERALL

Well, there's always Halloween and the fake eye-patch...

DEVELOPER:	CyberFlix
PUBLISHER:	THQ
WEB:	www.thq.com
REQUIRES:	P133, 16MB RAM, 70MB HD, 4x CD-ROM drive
RECOMMENDED:	P200, 32MB RAM, 250MB HD
STREET PRICE:	$50

TIPS ▼ Remember that in sword fights, you can back up and rest as well as swing and block. If you can hold off your opponent until he's tired, you'll have saved enough strength to hack him down. ▼ When the men in black ambush you in the mining-car shoot-out, keep your ears open. You won't always be able to see the objects they throw at you from a distance. But if you hear stuff coming, you should have enough time to turn and block before it hits you.

Jetfighter: Full Burn

Strap in, hold on, and shut up

By Andy Mahood

Fact 1: An F/A-18E Hornet at full afterburner will accelerate to Mach 2 and reach an altitude of 40,000 feet in under 90 seconds. Fact 2: It can do this with or without a full load of fuel and ordnance.

Mission Studios holds these facts to be self-evident with its new combat-flight game Jetfighter: Full Burn. Authenticity and accurate flight-modeling have been happily jettisoned in favor of a boot-and-fly formula that has characterized the franchise since the first Jetfighter was released 10 years ago. Number four in the series, Full Burn is a 3D-accelerated blast of avionic austerity (and a DOS game, no less!) that comes on four CDs. The game boasts 5 million square miles of accurately rendered northern European terrain, but the extra discs aren't needed for this so much as for the two hours of cinematic cut-scenes. In many respects, these FMV clips turn Full Burn into a jet-age Wing Commander clone, complete with B-movie acting and macho dialogue torn straight from a *Top Gun* script.

Experienced PC fighter-jocks may turn up their noses at the game's relaxed flight-model and coin-op avionics, but Full Burn will be a breath of fresh air to many. The game's storyline is centered around an American-Russian oil war off the coast of Norway, and you can choose to fight for either side from behind the stick of an F/A-18 or a pair of fictional F-22N and MiG-42 next-generation fighters. Each plane exhibits its own set of strengths and weaknesses, but they all deliver performance characteristics that are completely off the chart. Executing 9-G turns takes little effort, and entire missions can be flown on full afterburners without serious fuel concerns. Weapon loadouts have little effect on the plane's handling, and inbound SAM or AAM missiles can usually be defeated with a single flare or chaff bundle. All this makes the learning curve about as short as the attention span of the game's audience.

A MiG-42 missile launch looks much better from this angle.

Two campaigns in Full Burn offer several dozen pre-scripted missions on either side of the game's core conflict. Although not dynamic in nature, there are a healthy number of sorties to work through in both campaigns. Each can be replayed (or previewed) as a single mission in the Instant Mission menu. There are also training missions covering everything from carrier landings (one of the game's more challenging exercises) to wingman coordination. The game's multiplayer menu is much less impressive, however: it's limited to IPX/LAN or Kali Internet match-ups.

Full Burn's busy carrier-deck even has blast deflectors.

The 3D-accelerated graphics don't measure up to the eye candy found in Innerloop's JSF and Jane's F-15. But, apart from the bland aircraft textures and coarsely rendered cockpit art, they are still reasonably attractive and offer a silky-smooth frame rate and a remarkable sense of speed. A 3Dfx card is a necessity, however. The game can turn into a jerky slide show when run in software mode—even on a PII 300! The raucous game audio also complements the visuals nicely.

Full Burn certainly isn't for everyone. Those who demand realism and complex avionics will find it far too rudimentary to offer any significant challenge, and owners of Jetfighter III (with its recent 3Dfx massage) will likely not find enough new material to justify the purchase. For the rest of us, however, Full Burn quenches that "tastes great, less filling" thirst that hits when we just want to hot-rod around the skies and blow things up.

The F/A-18's HUD is as clean and simple as they come.

JETFIGHTER: FULL BURN

GAMEPLAY:	B-
GETTING STARTED:	B+
GRAPHICS:	C-
MULTIPLAYER:	C
SOUND CHECK:	B+

B- OVERALL

Scripted and simplistic, but still fairly entertaining.

DEVELOPER:	Mission Studios
PUBLISHER:	Take 2 800-468-3775
WEB:	www.missionstudios.com
REQUIRES:	P133, 16MB RAM, 50MB HD, 4x CD-ROM drive
RECOMMENDED:	P200, 20MB RAM, 3Dfx card
STREET PRICE:	$47

TIPS ▼ When approaching well-defended targets, order your wingmen to split up and attack AAA and SAM sites while you key in on the primary target (the AI is quite solid and will generally perform these tasks very well). This will also spread out the enemy defenses and offer you a little more breathing room. ▼ Don't waste your energy trying to evade incoming missiles with fancy flying: a single countermeasure release (chaff or flare) will fool them practically every time. ▼ Owners of Voodoo II or Rush-based cards will want to download the latest patch from Mission Studios (**www.missionstudios.com**). The game will crash otherwise.

Team Apache

Keeping up with the Joneses?

By Marc Dultz

Multiple viewpoints, including a full-featured cockpit view, let you see the action from virtually any perspective.

It's hard to ignore the fact that when a truly groundbreaking game hits the market, any subsequent, similarly engineered designs are invariably compared to it. As far as helicopter sims go, Longbow 2 is the current reigning champion with its detailed, dead-on portrayal of the US Army's AH-64D Longbow attack helicopter. No surprise, then, that no matter how hard Mindscape attempts to reposition its newly introduced Team Apache as a "high-action flight sim," it still has the unenviable task of stepping into the ring with the odds-on favorite.

Based on the less sophisticated, first-generation AH-64A Apache gunship, TA takes a different approach than its rival to modeling helicopter combat, putting you as commander of a company of attack helicopters. No attempt has been made to model either the OH-58D Kiowa Warrior scout or the UH-60A/L Black Hawk utility chopper, although other aircraft do appear. Unlike in L2, you can't assume the role of copilot/gunner (CP/G) and leave the flying to the computer. You can, however, pilot and rely on the computer to fire, or you can fly and fire.

TA contains a fully interactive training component that educates players on the characteristics, mechanics, and handling of the attack helicopter. There are six tutorials, ranging from take-off, landing, and auto-hovering techniques to weapons usage. Unfortunately, players must successfully complete each stage of the training regimen to learn how to employ guided and unguided munitions or to function in league with other gunships. While an online instructor capably explains the usage of the all-important Integrated Helmet and Display Sight System (IHADSS), the game doesn't show you how to actually interpret many of the other onboard systems—such as the Radar Warning Receiver (RWR)—under simulated battlefield conditions.

In addition to a training mode, TA contains a standard operational procedure (SOPS) mode that lets players intuitively edit and reconfigure airborne formations, which can then be test-flown during missions. TA also includes an instant-action mode that depicts high-intensity air-to-ground and air-to-air engagements over Latvia or Colombia. A dynamically generated campaign game lets players pick, allocate, and monitor the progress of their six aircrews, as well as select ordnance for each gunship. Finally, the game comes equipped with a robust mission generator capable of creating a wide range of mission setups complete with a diverse assortment of environmental conditions.

The in-flight map offers up-to-the-minute info on friendly forces and the location of enemy units.

Visually, TA falls way short of L2, offering understated terrain features, underwhelming pyrotechnic displays, and somewhat blocky portrayals of various weapons platforms. Several video modes are available, but higher resolutions seem to distort in-game speech.

The AI seemed challenging enough and wingmen appeared to behave in an intelligent manner, typically following the lead gunship until called upon to engage the enemy. And, although the flight model felt somewhat arcade-like, it does compensate for wind shear and blast waves.

TA has the dubious distinction of being the first chopper sim to weigh in against L2, and it has trouble landing punches on the venerable champ. However, it does have a lot to offer, especially for flight-sim enthusiasts who may not be interested in a hyperrealistic design that requires hours to learn. Coupling intense battle sequences with a less demanding flight model, and a robust mission generator with authentic environmental conditions, Team Apache is a viable alternative if you want to get up, get going, and get the lead out in a hurry.

TEAM APACHE

GAMEPLAY:	B-
GETTING STARTED:	B
GRAPHICS:	C+
3D ACCELERATED:	B-
MULTIPLAYER:	B
SOUND CHECK:	B+

B- OVERALL

A fine sim, but Longbow 2 still rules.

DEVELOPER:	Simis
PUBLISHER:	Mindscape 800-866-5967
WEB:	www.ssionline.com
REQUIRES:	P133, 16MB RAM, 250MB HD, 2MB SVGA, 4x CD-ROM drive, joystick
RECOMMENDED:	P166, 32MB RAM, 3D card, 8x CD-ROM drive
STREET PRICE:	$45

TIPS ▼ Practice using stand-off firing techniques that allow you to engage the enemy from long range, typically outside the reach of his weapon systems. ▼ If you're commanding multiple teams of gunships, avoid exposing the entire company to enemy fire. Instead, have one element hide behind intervening terrain ready to provide covering fire while a second team stays low and sweeps ahead.

ONLINE

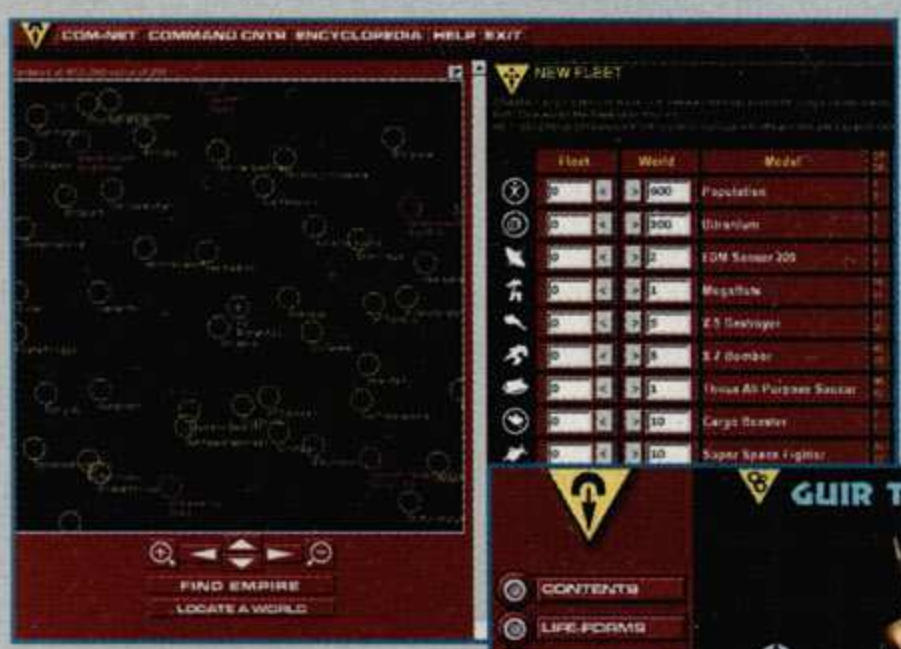
UltraCorps

Conquer, pillage, and email

By Barry Brenesal

Plot's not important in UltraCorps, a new online-only, multiplayer strategy game set in a distant galaxy. You select a race, receive a planet, and produce weapons to conquer other planets. Got it?

By rights, UltraCorps should be an abject failure. Its main screen uses white wireframe graphics to depict ships and planets. For colorized images, you have to go to the online help files, which take time to load—and when you get 'em, they're static 2D images, not animated 3D ones. The game neither runs in real time nor permits turn-based tactical deployment. Battles are resolved by the computer, which informs you of the results—the next day. UltraCorps uses 24-hour cycles, during which each player enters their allowable moves, then waits.



Too bad you can only see this weapon on the help screen (above). The menu for building a new fleet (upper left).

And yet, browser-based UltraCorps quickly became a passion for thousands of users when it debuted recently on Microsoft's Zone (**www.zone.com**). Initially skeptical, I, too, became absorbed enough by the game to briefly drop work during the early morning hours (the game cycles at 4 a.m. Eastern time) and place my next moves. Are VR1 and Microsoft flashing subliminal messages on your screen? If not, why is UltraCorps so popular?

The answer lies in the nature of online gaming, which stands some of the basic rules for marketing standalone computer games on their head. Consider: You'd never think of playing a standalone game against computer AI in anything other than real time or instant turns. But on the Internet, where there are so many other activities to perform, a game with 24-hour turn cycles works well. Find 15 minutes and it's simple to place moves between more time-consuming Web tasks—and that very simplicity is in UltraCorps' favor.

VR1 was also wise to keep the complexity level of its game low. Here, too, conventional wisdom posits the opposite: add multiple subsets of activity, because strategy gamers enjoy depth. But UltraCorps is stripped of elements that would get in the way of quick analysis and entry. You don't have to contemplate industrial support-structures, terraforming, or research. You build stuff, launch it, and kill or be killed.

There are other engaging features, such as the game's chat room and the ability to send in-game email to friends, foes, and alliances so you can launch dastardly schemes or coordinate attacks.

UltraCorps' only complexity lies in its ordnance selection. Each of its many death-wielding weapons has a cost in Ultranium (the universal ore) and population, which are renewed every cycle. Items are also rated where applicable for offense, defense, flight speed, number of attacks per round, population damage, and cargo capacity.

For determining strategic alliances, UltraCorps relies upon its players. There are 14 races, which players usually treat as competing teams; each race has its own mail group, unavailable to other species. There are also smaller, user-defined teams with their own password-protected mail groups. The role-playing is left up to the players themselves. (I wouldn't mind race-specific artwork applied to the mail and gaming menus, however.)

UltraCorps games are not endless. Each "universe" is limited to a given number of cycles, usually 60 or 90, after which the winners are declared according to the numbers of worlds controlled, economic worth, and so on. A few games run contiguously, so Zone members who sign up for UltraCorps can play in at least two universes simultaneously with different starting planets and races, if they so choose.

The various races you can assume have different starting conditions.

Thumbs up on UltraCorps. It ain't pretty or deep, but for some light strategic multiplayer fun online, it's welcome.

ULTRACORPS

GAMEPLAY:	B-
GETTING STARTED:	A-
GRAPHICS:	D
MULTIPLAYER:	B
SOUND CHECK:	N/A

B- OVERALL

Well-suited to easy play online.

Developer: VR1
Publisher: Microsoft
Web: www.zone.com
Requires: P133, 16MB RAM, 2MB SVGA, 4x CD-ROM drive, 28.8 modem

TIPS ▼ When building, don't neglect the value of the "attacks per round" stat. Even a kludgy garbage scow of a ship can get lucky if it has multiple attacks. If they're cheap, so much the better: you need all the cheap ships you can buy at first so you can grab a few nearby neutral planets. ▼ A good starting race is the Orn: it's both well-balanced for offensive/defensive activities and popular with other players. You should find many other Orn in the universe, and that's a jump on forming some alliances.

Aliens Online

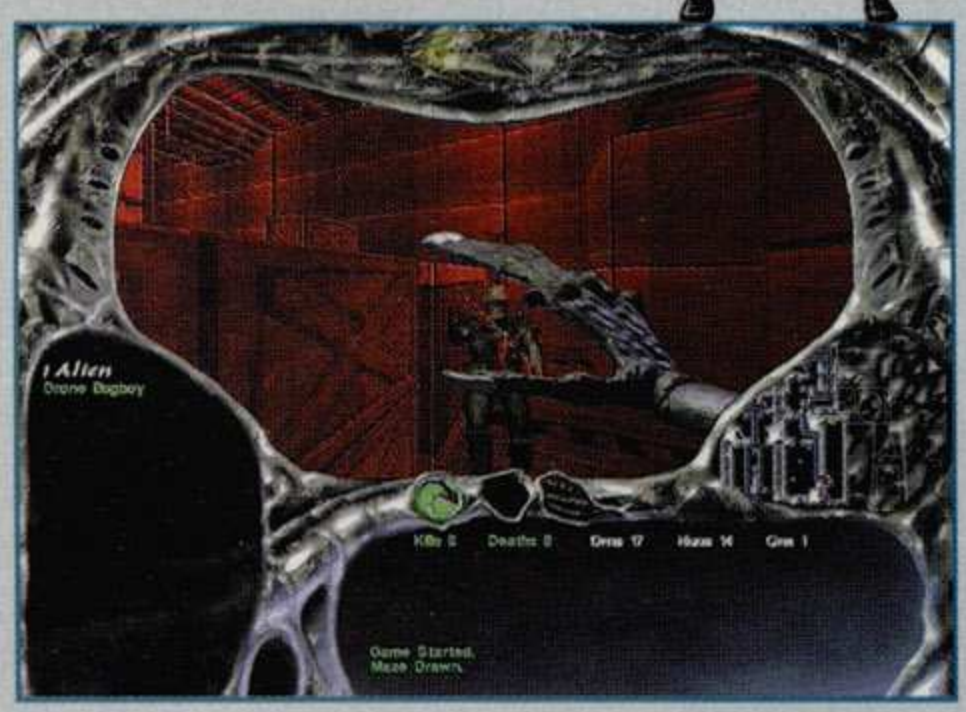
Marines, drones, Queens, and lag

By Michael E. Ryan

You'd think Aliens Online had plenty to distinguish it from the first-person shooter crowd: the *Aliens* license, for one, plus the allure of being an online-only game where teamwork actually means something. To some degree, this combination works well, and AO has the makings of a great action game. Sadly, it suffers from spotty performance and a sadly dated graphics engine.

You can play AO through GameStorm (**www.gamestorm.com**) as much as you want after subscribing to the online-gaming service. First you have to download the 350K GameStorm client software and the beefy 18MB AO front end.

The next step, character creation, is straightforward. Aliens can be a drone (those big, long-headed fellows) or a face-hugger. As you gain experience, you can eventually become a Queen. Marines can be either sex, customize their appearance, and choose a specialty: infantry, heavy weaponry, scouting, or medical. Your weapons include a pulse rifle, shotguns, and pistols in solo missions, with the option to carry a flamethrower and a target-locking smart gun in a fireteam (a group of Marines working together). You also get the famous motion detector ("They're comin' out of the walls, man!") for tracking Aliens.



Aliens see things differently than their Marine foes—and fight differently, too.

The two characters differ as you'd expect: Aliens are very fast and work well on their own, while Marines are slow and more powerful in groups. At press time, you could maintain four different characters (three Marines and one Alien) simultaneously.

Next stop is the staging area. This is your general online-gaming chat room, with lists of players and currently running games. Look for an open mission and join alone or as part of a fireteam.

AO supports 60 players per mission (30 per side), though the largest I witnessed had 22, and the average seemed to be between four and eight. At press time, there were only five levels and one mission type: eradication (just what it sounds like—team deathmatch). Mythic and Kesmai say there'll be a number of new levels and mission types, but nothing specific has been announced yet.

It looks and plays a lot like Doom, except your view of the action is considerably smaller—for Marines, it's in a window that occupies the upper right-hand corner of the screen. It doesn't take long to get used to it, but it does seem rather archaic to squeeze this kind of game into such a tiny space.

The level design isn't flashy, but despite the Doom-like graphics and the small view port, this game can inspire the same kind of tension and terror as the *Aliens* movie. More than once I found myself jumping out of my chair when an Alien suddenly dropped down in my path. The sound effects help: the human death screams are realistic and the Marine pulse rifle makes an intensely satisfying noise.

Game performance can, however, be intensely dissatisfying. Over ISDN at 128K, I experienced sessions where others moved around me in fits and starts—not the ideal situation when you're trying to gun down an Alien drone.

The graphics make Doom look like Quake, but you'll still be startled when an Alien attacks.

Still, AO can be one hell of a lot of fun if you catch it on a low-lag day. Working with a fireteam to take out the Alien hordes can be quite a rush, as can catching and slashing an unsuspecting human. But unless its performance issues are hammered out and it evolves graphically, I can't see this game being more than a cult favorite among team-oriented online gamers.

ALIENS ONLINE

GAMEPLAY:	B-
GETTING STARTED:	C+
GRAPHICS:	C
MULTIPLAYER:	C+
SOUND CHECK:	B+

C+ OVERALL

Graphics, performance, and interface issues aside, it can be exciting.

DEVELOPER:	Mythic Entertainment
PUBLISHER:	Fox Interactive/Kesmai Studios
WEB:	www.gamestorm.com
REQUIRES:	P90, 16MB RAM, 30MB HD, 14.4K modem
RECOMMENDED:	P166, 32MB RAM, 56K modem
STREET PRICE:	$9.95/month

TIPS ▼ As a Marine, don't get too used to that trusty pulse rifle. It's plenty powerful for taking down computer-controlled Aliens, but when a high-level, human-controlled Alien comes along, you'll need more firepower. ▼ If you play as an Alien, use your speed and jumping ability to stay out of those pesky Marine sights. Also, take advantage of the many crawl spaces to move about unseen—then plop down on hapless humans. ▼ Early on, you may want to employ a useful—if weaselly—way to accumulate experience: Join games that have been running for a while and where your side is about to claim victory. If you're alive when your side wins, you'll earn a victory that'll help you advance to the next rank.

Fox Sports Golf '99

Stop swinging

Okay, that's enough—no more golf games. It seems every publisher under the sun is releasing one, hoping to cash in on the success of the Links and PGA Tour series. Problem is, the further you move

Harsh polygons, yes; photorealism, no.

from EA, Access, and Accolade, the worse these games get. Fox Sports Interactive, which plans to release a title in every major sport, needs to forget about golf.

Gremlin, a generally solid developer who turned in a decent soccer title for Fox (see below), really sends Golf '99 off into the woods. The polygonal 3D graphics are cut-rate, and nothing looks natural. Fox wants to get lots of mileage from the 3Dfx-supported graphics and the freely moveable camera, but there's nothing to look at.

The Fox Swing—no kidding—is a nightmarish drag-and-push system that mimics golf about as accurately as sweeping a broom. Two-click and three-click options are available, but there's no point. The eight included courses are generic and uninteresting. You can pick your player's shirt and baseball-cap color, but there's no contest between this and the in-depth, comprehensive packages offered by PGA Tour and Links.

About the only interesting thing Fox Golf does is provide an Amateur Tour where you compete with other entry-level golfers, and then a Pro Tour where you can play for money against more skilled opponents. (There's no PGA license. You're playing for trophies like the Cheetham Cup. Have fun.) There's good commentary throughout, which is a bit of a surprise, given the level of discourse generally found among Fox Sports Net announcers.

This game is a stark example of me-too'ism that should've been delayed for more development. Let's hope Fox Sports' future releases are better. —*Daniel Morris*

FOX SPORTS GOLF '99

GAMEPLAY:	D
GETTING STARTED:	B
GRAPHICS:	C
MULTIPLAYER:	D+
SOUND CHECK:	B+
OVERALL	D

Whack! Right into the sand.

DEVELOPER:	Gremlin Interactive
PUBLISHER:	Fox Sports Interactive 888-369-0031
WEB:	www.foxsportsgames.com
REQUIRES:	P120, 16MB RAM, 87MB HD, 4x CD-ROM drive
RECOMMENDED:	219MB HD
STREET PRICE:	$50

Fox Sports Soccer '99

This Cup's half full

Fox Sports Interactive has jumped headfirst into a market held in a chokehold by EA Sports, so it was a very wise move to ally with ace developer Gremlin Interactive on its new line of sports titles.

Fox Sports Soccer '99 isn't bad. Gremlin's soccer minds know this game well, and in typical Fox style, the matches are of the thrill-a-minute variety. Defense is marginalized in favor of streaking, slashing attacks, with players who can rush down a wing alone and get shots on goal, even against tough opponents and on advanced difficulty settings. I got a 9–6 score in a 90-minute match between the US and Tunisia, and that score included a couple of blocked penalty shots.

A shot from outside the box is wrapped up by the English goaltender.

While I'd be lying if I said the gameplay isn't generally a lot of fun, it quickly becomes clear that both of EA's soccer titles, FIFA and World Cup, are better games. Fox Sports Soccer '99 has no FIFA license, so there are no real players, meaning your heroes are guys with names like Goda and Nelson and Garrett. No Ronaldo, no Valderrama. More unforgivably, the gameplay itself has some big holes, such as an almost total absence of headers and a few AI scripting flaws that permit you to pull stunts like timing challenges along the sideline to routinely trick the AI into dribbling the ball out of bounds.

The game's decent overall package—including a great practice mode that lets you play as one team in a skills-building scrimmage—could be a good foundation for a franchise, and Fox's next step should be to score a FIFA license and work on smoothing out the gameplay realism. As it stands, it's simply not in EA's league. —*Daniel Morris*

FOX SPORTS SOCCER '99

GAMEPLAY:	C+
GETTING STARTED:	B
GRAPHICS:	B-
3D ACCELERATED:	B
MULTIPLAYER:	B-
SOUND CHECK:	B-
OVERALL	C+

Lots of holes, but fun on-field play.

DEVELOPER:	Gremlin Interactive
PUBLISHER:	Fox Sports Interactive 888-369-0031
WEB:	www.foxsportsgames.com
REQUIRES:	P120, 16MB RAM, 87MB HD, 4x CD-ROM drive
RECOMMENDED:	219MB HD, 3Dfx card
STREET PRICE:	$50

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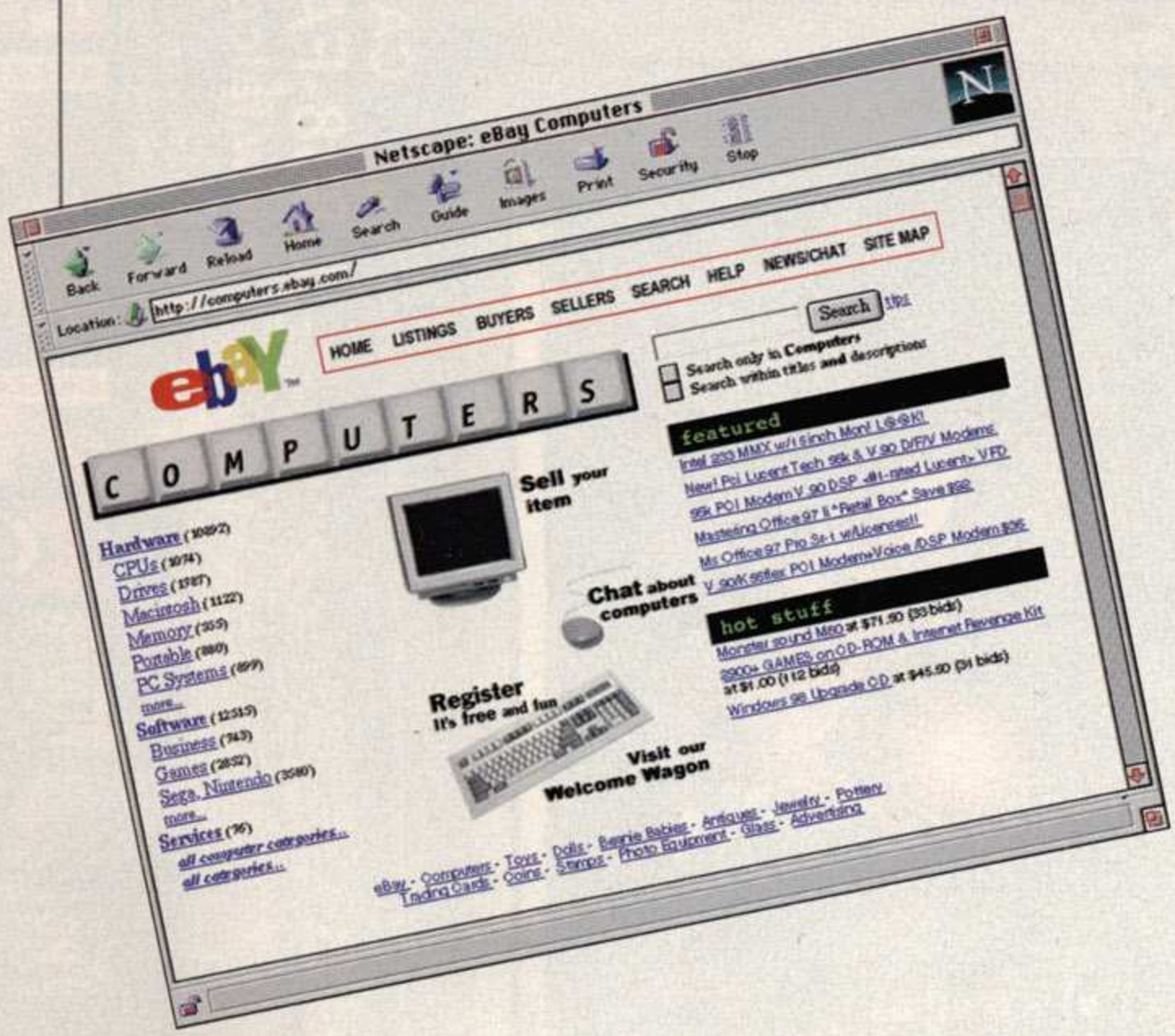

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SWAT 2

To protect and serve in real time

By Daniel Morris

Imagine a real-time strategy game featuring a lot of guns, cops, and criminals, in which the object of each mission is to peacefully resolve a tense situation and make sure no violence erupts.

Yep, it must be time for the newest installment in the Police Quest series.

SWAT 2 builds off the themes of the underrated Police Quest: SWAT, an FMV adventure that offered a fresh gameplay milieu and a genuinely fascinating tour through Special Weapons and Tactics operations.

Chucking the FMV for sprites and real-time strategy, SWAT 2 puts you in command of either the LAPD's elite SWAT unit or a whacko terrorist cell bent on spreading loony propaganda around Los Angeles. The terrorists will get public attention any way they can, and random acts of terror and violence are definitely on the menu.

The campaign begins with training missions that get you into the routine of SWAT tactics. Be warned—this ain't cowboys 'n' aliens. According to SWAT principles, the preservation of human life is paramount, and that includes the criminals'. Your training will get you into the good habits of methodical advance, including the essential safety techniques of room-by-room searching. No charging around, no kicking down doors. It's a slow, cautious, careful style. And if it doesn't bore you to sleep or send you reaching for your copy of Starcraft, it just might addict you with the discipline required for your assault.

Everything your SWAT element does has to be done methodically: use mirrors to see around corners before advancing, toss phones in to holed-up terrorists to provide the negotiator with contact (because a negotiated surrender is always preferable to a police entry), and verbally challenge suspects before engaging them at gunpoint. There's a lot to learn and incorporate, and none of it has to do with unleashing your Heckler & Koch submachine gun.

Flashbang grenades confuse 'em every time.

The 30 missions (15 for SWAT, 15 for the bad guys) unfold in real time, but the action is rarely what you'd call hectic. Much of the mission is simply positioning and maneuvering, intel-gathering, and waiting. The details of the operation build up slowly—you can send K-9 dogs to sniff for hidden bombs, arrange snipers in good firing positions, plant and detonate entry explosives and "flashbang" suppressive grenades. You must consult with the negotiator, with the chief, with the chopper pilot. It's all part of a successful resolution to each crisis, all designed to minimize danger to civilian hostages.

Police flee from a barrage of gunfire after a face-off turns deadly.

Visually attractive—if hampered by the small size of people on the screen—SWAT 2 is a presentable real-time strategy game. Of course, it's graphically nowhere near the level of the cutting-edge RTS blockbusters. In contrast to its remarkable gameplay mechanics, its real weak points are regrettably basic.

Sound is bad throughout. All the voice actors are laughable—the cops sound unconvincing, while the terrorists are just plain campy. AI can occasionally produce some head-shaking, too: Cops sometimes have a tendency to bunch up and offer themselves as sitting ducks to sniper fire, and hostages are often stricken with "headless chicken" syndrome, running around aimlessly into walls and such.

None of this detracts too terribly from the involving gameplay. It's not for everybody, but SWAT 2 will appeal strongly to hardcore small-unit tacticians who relish the detail work and enjoy a wonderful police setting.

SWAT 2

GAMEPLAY:	B
GETTING STARTED:	C+
GRAPHICS:	B-
MULTIPLAYER:	B
SOUND CHECK:	C-

B- OVERALL

Would-be negotiators and police strategists will love this SWAT sim.

DEVELOPER:	Yosemite Entertainment
PUBLISHER:	Sierra On-Line 800-757-7707
WEB:	www.sierra.com
REQUIRES:	P133, 16MB RAM, 90MB HD, 4x CD-ROM drive
RECOMMENDED:	P166, 32MB RAM
STREET PRICE:	$50

TIPS ▼ Have your point man crouch down and use the mirror to see around corners before making your stealth entry. ▼ Never just walk or run into a room. Slice the pie: move through doorways in a semicircular motion so that you don't expose your body. ▼ You get punished if people— even terrorists—die. Before opening fire, verbally challenge everyone when you first encounter them. A lot of times they'll give up, especially when their morale is low. ▼ Make heavy use of flashbang grenades. They're a great way to non-violently subdue bad guys without harming hostages.

Upon further reflection,

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"Sierra pulled out all the stops for this beautiful game." – PCFan

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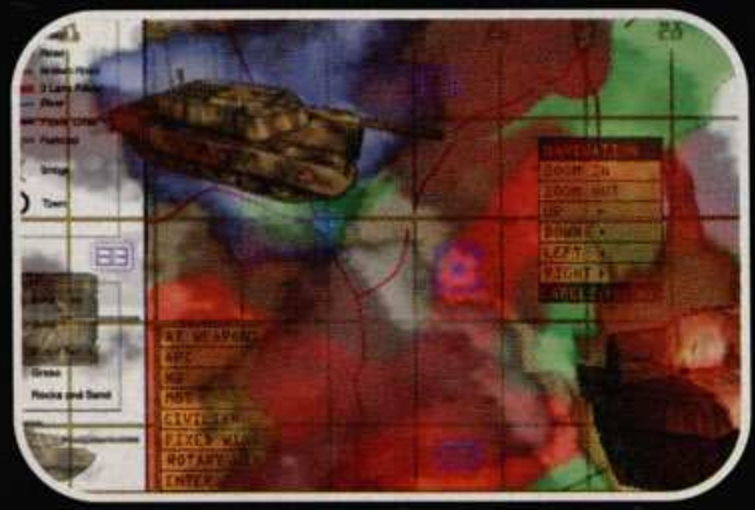

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Extreme Tactics

Option paralysis

By Chris Hudak

Getting your ass kicked is never an enjoyable experience, unless you have deep-seated psychological problems. Getting your ass kicked in an Extreme Tactics multiplayer game, however, is *particularly* galling because, more so than in any other RTS game, *it's your own fault*. Media Station decided to up the ante in the increasingly crowded real-time strategy competition by letting players design their own unit types, and it's a gambit that, on the whole, pays off.

First, the setup: On the desolate planet Calibria, blah blah, two warring clans, blingidy blah, dwindling resources, yada yada. Now, the hook: Instead of the preformatted assembly line of units, you can build custom-cooked war machines cobbled together from a number of chassis types (which essentially offer different damage capacities, build times, and weapon mounts), drives (wheels, tank treads, hovercraft, Mech-style walkers, spider-style walkers, or airborne), shields, stealth abilities, and, of course, weapons. It sounds so simple and obvious on paper, but wait until you try it. The resultant branches of rock-paper-scissors probability are hideously, jaw-droppingly interrelated, and the results are both good and bad.

The major interesting spin on the RTS formula is that the so-called "tactic" known as the tank rush instantly morphs from the smirking certainty of German Dodgeball to the terminal randomness of something like Russian roulette. You are taking your life into your hands when you throw a mass of units willy-nilly at the enemy; imagine your horror as you discover, just as the first-contact shots are exchanged, that the enemy's weapon/shield configuration renders his units almost invulnerable to the particular configuration sported by your attacking units. Your metal slugs get deflected 75 percent of the time by anti-magnetic shielding, for example, while that Spectrum Shield you were relying on to deflect lasers is getting chewed to electromagnetic gristle by the particle beams you didn't know the enemy was packing. The lesson? Experiment and observe.

Especially in multiplayer games, it's a good idea to back up that attack wave with a wave of scrap-collectors.

Truth be told, the tank rush is an unlikely choice anyway because the build times in Extreme Tactics are...well, extreme, ranging anywhere from 20 seconds to well over a minute for bigger, tougher units. And in the relatively uninspired single-player missions this is just as well, because the AI here is a beast of two natures. On the one hand, you're given an impressive range of behavior types. You can, for example, instruct a unit to return for repairs after it sustains a certain amount of damage (this is an option I would have killed for in many a Red Alert game). On the other hand, the pathfinding can exhibit abysmal stupidity, with units bumping into friendlies and wasting precious seconds even when there's plenty of room to maneuver around the obstruction.

The hovers don't look like much, but each one is packing particle guns.

Extreme Tactics is an admirably ambitious and subtle game, marred by some heartbreaking flaws that could, dare I suggest it, be fixed with one or two minor patches. For example, it would be nice for names to show up when units are selected—it's easy to get confused as to which unit is sporting which configuration (and the second or so it takes you to check the weapon loadout can mean instant death).

Nevertheless, a good multiplayer game of Extreme Tactics is immensely satisfying because the constant factor of what-does-the-other-guy-have paranoia encourages players to experiment with new vehicle types. There's nothing quite like tearing apart a much larger enemy force when your opponent got lazy and/or didn't anticipate the nature of your battle plans.

EXTREME TACTICS

GAMEPLAY:	B
GETTING STARTED:	C
GRAPHICS:	B-
MULTIPLAYER:	B+
SOUND CHECK:	C

B- OVERALL

Radical, largely unpredictable spin on the RTS formula.

DEVELOPER:	Media Station
PUBLISHER:	Piranha Interactive 602-491-0500
WEB:	www.extreme-tactics.com
REQUIRES:	P90 (P120 for multiplay), 16MB RAM, 30MB HD, 4x CD-ROM drive
RECOMMENDED:	P120
STREET PRICE:	$45

TIPS ▼ Remember that unit armor is stronger in front than on the flanks—whenever possible, attack from the side or rear. ▼ Misinformation works both ways—if the enemy is a long way off, a small attacking force of cheap, disposable units armed with one type of weapon may mislead your opponent's R&D efforts. ▼ If the enemy seems to be focusing on a particular technology, forget his battlefield units and knock out his relay station—this can instantly turn the whole tide of the war.

WarGames

Would you like to play a game?

By Peter Olafson

A real-time strategy game based on *Wargames*? As in the 15-year-old Matthew Broderick movie? Yeah, that was my reaction too. But, fact is, if you overlook the less-than-fully-baked premise, you'll find that MGM Interactive's first venture into the genre has some admirable qualities.

This 3D C&C variant is set 20 years after the events in the 1983 movie, in which a young hacker in search of a game almost ignites World War III by setting off a nuclear simulation on NORAD's WOPR computer. In the interim, the WOPR has decided that nuclear war's unlikely—I'm sure India and Pakistan will be happy to hear that—and decides to use conventional means to destroy mankind's capability to wage war.

How exactly the WOPR brings this off I don't know—last I noticed, the computer was stuck in a room at NORAD. At any rate, that's the explanation, and here's the war: You take either NORAD's human or WOPR's robotic forces through a 15-mission campaign in third-person 3D. The game also offers the full complement of multiplayer options for up to four players, offering an experience that's essentially like the single-play.

You do the usual real-time strategy stuff with a few twists. One is hacking by sending special units into key structures. It's more or less the equivalent of research. Among other things, it's the way you earn most of the money to erect buildings, buy units, gain intelligence, and enhance your units' performance and degrade your enemies'. A Defcon register, complete with Klaxon, gives you a general sense of your progress.

The intimacy thing: WarGames fully zoomed, as a pair of Mk IV Walkers descends on an enemy-held grove.

You'll find plenty of land, sea, and air units (around 30 per side) judiciously spread throughout the body of the game. By itself, that's enticement to keep playing: I *want* to see that battleship.

The real attraction, though, is the rotatable 3D game-world. It's unlike any I've seen since Myth. With the angled-down view zoomed-in so a snow-burdened pine tree is half the height of the screen, a sea of view-obscuring fog all around, and a mission map that tells you you're right on top of a still-invisible enemy, WarGames becomes intimate, tense, almost frightening. The Big Picture suddenly doesn't matter; there's only The Moment. For a purely RTS game, that's an achievement.

The old "tank rush"—here, actually, a mech rush—still works on occasion.

Now, it does need fine-tuning. The pathfinding is mediocre: Units asked to find their way across more than a modest distance not only fail to follow optimal routes, but also often find themselves stopped dead by terrain or other units they bumped into en route. Occasionally, they even go off in entirely the wrong direction. The explosions have little variety—blowing up a simple guardhouse produces the same fireworks and animation as destroying a command center. The sound effects seem incomplete, and the environment, while pretty, is comparatively static. Water doesn't flow. Houses don't burn. Hillsides don't crater.

The missions I played tended to be rather linear (though not as linear as the in-mission emails from characters would sometimes suggest). And the AI is a mixed bag. It's pretty solid defensively and does pull off some clever moves on the attack—for example, calling in a specialized unit that can fire from outside a troublesome defender's range. But it often falls prey to classic real-time AI foibles like sending forces into action piecemeal and attacking on only one front.

And, yeah, the premise still seems silly. (C'mon: A *Wargames* game ought to be a nuclear-war sim!) But with or without the movie baggage, WarGames is a pleasant surprise.

WARGAMES

GAMEPLAY:	B
GETTING STARTED:	B
GRAPHICS:	B+
MULTIPLAYER:	B
SOUND CHECK:	C

B OVERALL

This ain't no movie—it's conventional warfare.

PUBLISHER:	MGM Interactive 800-586-2021
WEB:	www.wargamesmgm.com
REQUIRES:	P133, 16MB RAM, 17MB HD, 4x CD-ROM drive
RECOMMENDED:	PII 233, 32MB RAM, 30MB HD, 4MB 3D card, 12x CD-ROM drive
STREET PRICE:	$45

TIPS ▼ Watch your wallet, and spend only what you need to achieve your goals. If a mission feels unbeatable, you probably haven't invested enough in agents and hackers for your command centers. Given a little time (reduced if you assign more than one unit to a task) to work their magic, they will often turn the tide in your favor.

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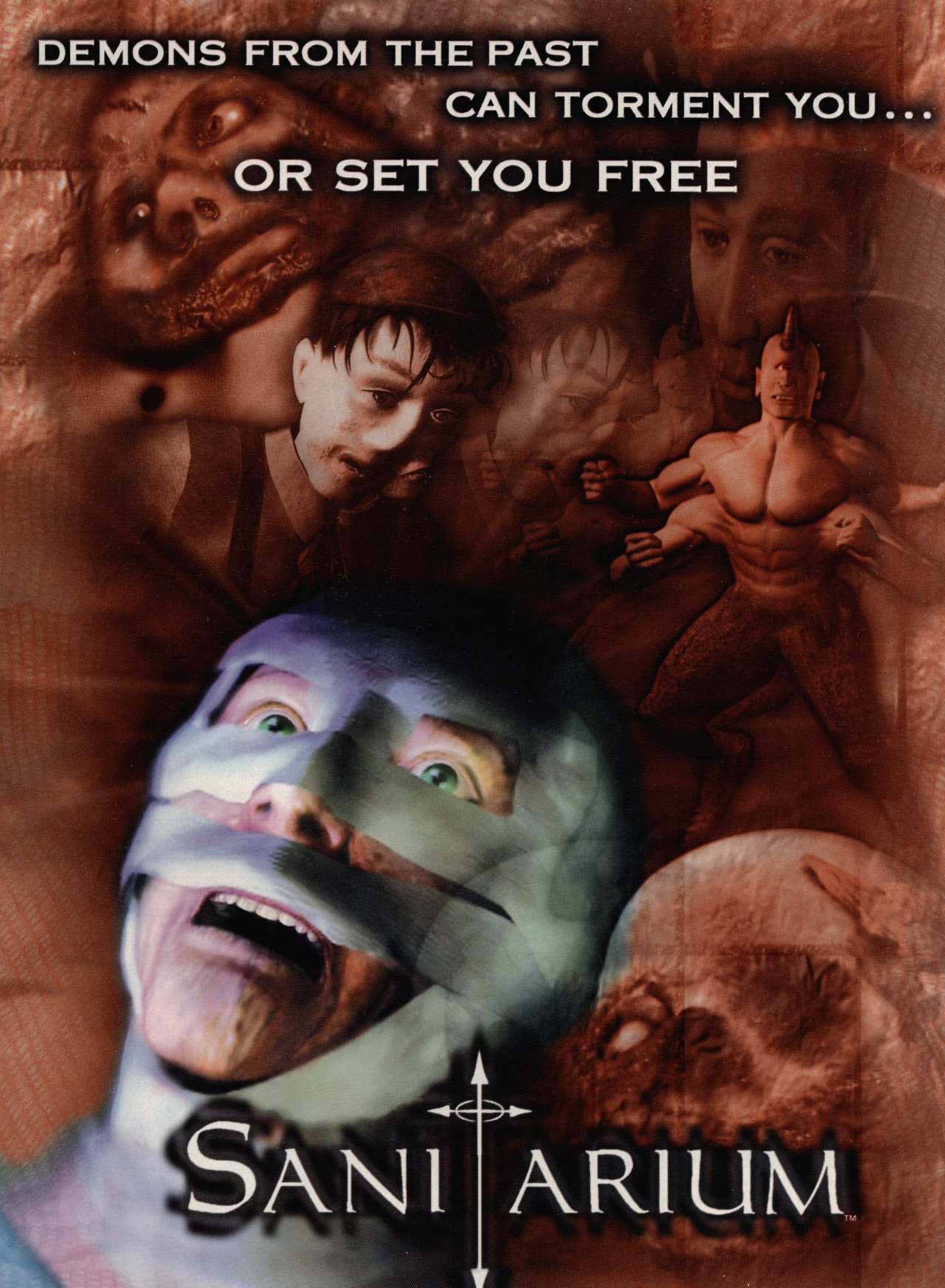

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M.A.X. 2

Sorry M.A.X., time for the real time

By Peter Olafson

Like 1996's M.A.X. (Mechanized Assault and eXploration) before it, M.A.X. 2 is a punchy, tightly wound little strategy game that allows you to play by turns. But that's about as far as the resemblance goes. In fact, this follow-up has a bit more in common with a little game called Total Annihilation.

Initially, M.A.X. 2 finds you controlling the human component of a multirace alliance called The Concord. In the first of the four campaigns—each with nine missions—you're called upon to put down a band of renegades. It's not until a few missions in that you come across the real enemy—an ancient and savage alien race called the Sheevat with a parallel set of equipment. (Regrettably, you can't play as the Sheevat until the final campaign, though they are available in multiplay.)

Hey, the briefing said this'd be a walk in the park. It turns out to be a walk in the dark. Our asses get resoundingly kicked by Sheevat defenders.

The big change is that, besides being able to play the tense, turn-based games brought over from M.A.X. (hurrah!), you can also play in real time (Ack! Heresy!)—albeit still using the notion of turns as the foundation for the game clock.

That's how I played M.A.X. 2 most of the time, and it played well. Like M.A.X., the game is tight, crisp, well-coordinated. It feels like a unified whole, not a bunch of disparate parts, and that's a function of thoughtful design.

This must be around the 50th real-time strategy game I've played in the last 18 months, and consequently, I can't put a finger on any one game element that sold me. There's the dandy music (and I hate most computer-game music) that evoked *A Clockwork Orange* and *Star Trek*; the interesting use of indigenous animals; a dedicated M.A.X. 2 site for multiplayer games (**www.interplay.com/max2/online/**—why doesn't everybody do this?); the odd, well-considered features (like queues for mobile construction-units and units that respond in different fashions according to their well-being); and a general sense of richness without an attendant sense of confusion.

Which brings us back to TA. Now, M.A.X. 2 isn't a TA clone (in fact, Interplay's offering a $10 rebate on its Web site for owners of TA, Starcraft, or Star Wars: Rebellion). Despite having something over 100 units and structures, it doesn't have TA's visual sense of abundance and bigness. Indeed, M.A.X. 2 follows the recent RTS trend of teeny-tiny units.

You can assign multiple structures to mobile construction-units. This one's started on a defensive line of anti-aircraft turrets.

On the other hand, the graphics do bear a certain resemblance to Cavedog's classic, as both games use rendered maps. M.A.X. 2's aren't as finely-etched and don't offer the same sense of depth. But both evince the same healthy interest in post-combat wreckage as an obstacle (to construction, not movement) with scrap value when cleared by bulldozers. Both offer solid multiplayer systems. Both are dedicatedly combined-arms games and, consequently, are difficult in rational ways.

Most of my complaints are on the nit-picky side. For instance, while many of M.A.X.'s micromanagement elements are gone, you have to build roads square by laborious square. The game let me win one difficult mission without fulfilling the victory conditions. (This appears to have been repaired in the patch.) And I don't care for the campaign game's practice of making the player select each mission manually, rather than stringing them together automatically.

But, generally speaking, I'm impressed. M.A.X. 2 is a keeper.

M.A.X. 2

GAMEPLAY:	B+
GETTING STARTED:	B
GRAPHICS:	B-
MULTIPLAYER:	B+
SOUND CHECK:	A-

B+ OVERALL

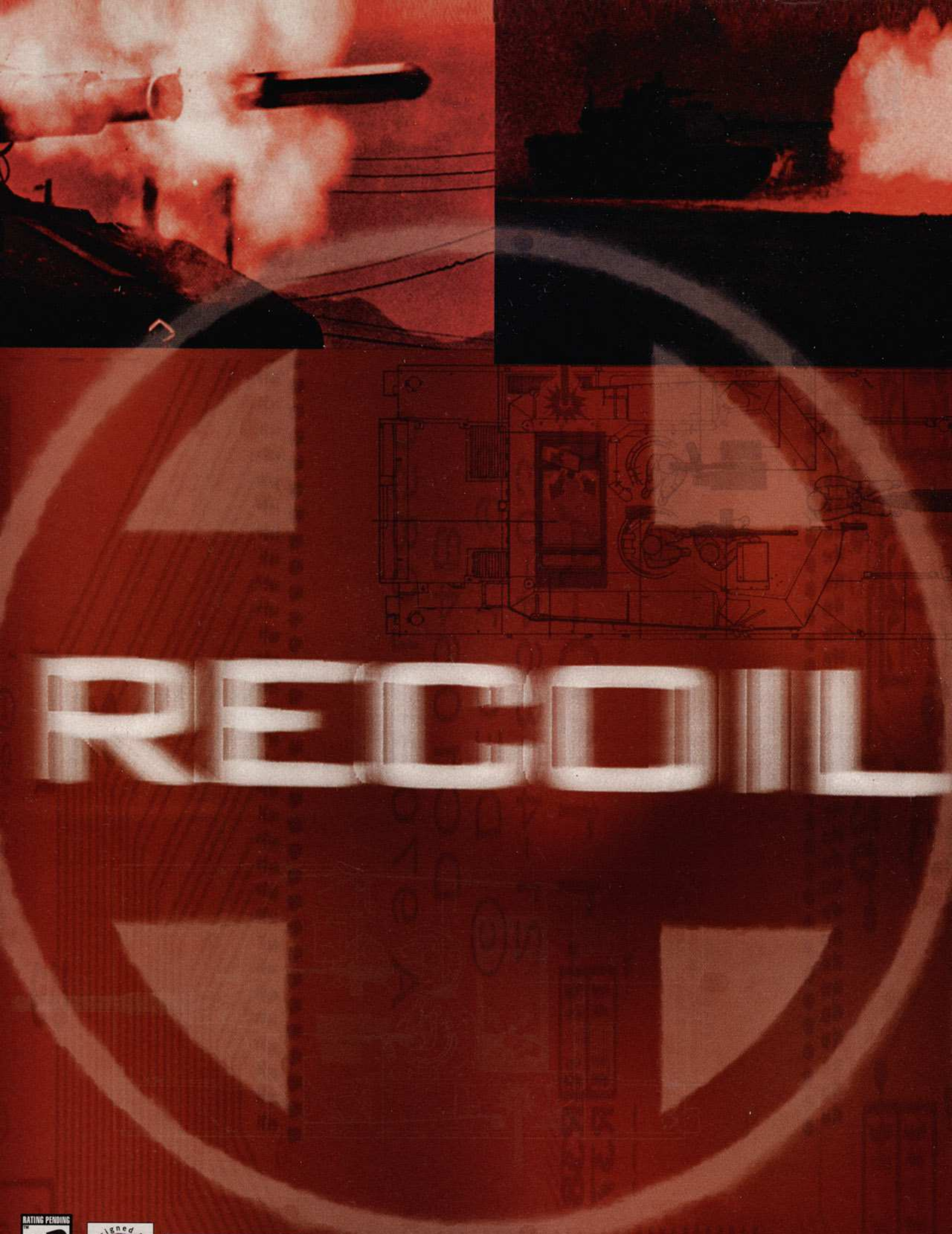
M.A.X. meets TA. Something lost, something gained.

PUBLISHER:	Interplay 800-468-3775
WEB:	www.interplay.com
REQUIRES:	P133, 16MB RAM, 80MB HD, 2x CD-ROM drive
RECOMMENDED:	P200, 32MB RAM, 4x CD-ROM drive
STREET PRICE:	$50

TIPS

▼ Defend in depth. The old turret-line defense will work only until your enemies figure out it's vulnerable to air strikes (so include the odd anti-aircraft turret) and long-range missiles (so include the odd artillery turret).

▼ While you're maintaining your perimeter, don't be scared to strike out blindly and in force in search of enemy installations. I've gotten lucky this way, and even if you don't, at least you'll divert their attention.



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Tribal Rage

Rage against the machine?

By Marc Dultz

The exponential growth of the real-time strategy genre has deluded many publishers into thinking that they, too, can take aim at the RTS target, effortlessly striking the bull's-eye by simply fusing a game engine with a contrived concept. Unfortunately, the finished product rarely breaks new ground or offers truly compelling gameplay. With Tribal Rage, veteran game-publisher TalonSoft has forsaken its comfortable wargaming niche, unleashing its first salvo at what others already know to be an elusive target.

Heroes come in all shapes, sizes, and hokey costumes.

As far as premises go, Tribal Rage takes a rather offbeat look at a post-apocalyptic world still swept up in unrelenting turmoil. It's 2030, and Earth has finally succumbed to the combined ravages of famine, plague, and war. More specifically, Southern California has been overrun by a series of predatory tribes who now scour the land scavenging for what few precious resources remain.

A fiery attack on Trailer Trash.

Society has fractured into six tribes: the Cyborgs, Enforcers, Death Cultists, Bikers, Amazons, and simple country folk euphemistically called Trailer Trash. Each group is composed of dissimilar units ranging from Boom Chicks to Mamas' Boys and Ball Busters to Steel Madonnas, each augmented by tribe-specific heroes. Though there's an assortment of fully animated buildings and exotically designed ground vehicles, there are no air or naval forces.

On the plus side, you may customize your forces to your liking, spending credits on new technology, stripping away or adding new components any way you see fit.

On the other hand, just about every facet of the game is dealt with in a rather uneventful and sometimes confusing manner. Resource management is handled in a familiar if rudimentary fashion: locate ore deposits and erect a mine on the site. It automatically extracts and processes the mineral, adding monetary credits to your account. Credits can also be earned by collecting gold caches haphazardly strewn about the map or by holding casinos. How casinos factor into a devastated world is never fully explained and probably shouldn't be.

Producing new units is equally simple: click on a unit type and it automatically appears adjacent to your HQ. You can create an army instantaneously as long as you possess plenty of credits to cover the costs. So much for surprise attacks.

Map construction is a throwback, employing primitive 2D backdrops that are both unappealing and spiritless. The game's pacing and scenario design are disheartening, to say the least, often requiring you to search a huge map for a small enemy encampment.

Combat is perhaps the only aspect treated with any forethought. Every unit is ammunition-dependent and easily exhausted after a few moments of prolonged battle. As a result, you must constantly worry about resupplying your units, scouring the map for ammo power-ups or returning depleted units to supply depots. This becomes a little tiring, especially if you're controlling scores of units scattered all over the map.

Even the campaign game seems to be halfheartedly designed, requiring you to move from one tactical zone to the next to eliminate any opposition. Although you can allot funds and redeploy troops from other zones to contested regions, the resource-reallocation method is utterly confounding, often causing accidental loss of men and material.

Multiplayer options include LAN, modem, and Internet play, though it wasn't much more engaging than the single-player experience.

It's not that Tribal Rage is an altogether inferior game. But with so many truly inspiring products having already crashed ashore, it's just another inconsequential breaker in the swelling RTS sea.

TRIBAL RAGE

GAMEPLAY:	C-
GETTING STARTED:	C
GRAPHICS:	B-
MULTIPLAYER:	C
SOUND CHECK:	C-

C- OVERALL

Dry and uninspiring.

Developer: Disintegrator
Publisher: TalonSoft 800-211-6504
Web: www.talonsoft.com
Requires: P100, 16MB RAM, 22MB HD, 4x CD-ROM drive
Recommended: P166, 32MB RAM, 8x CD-ROM drive
Street Price: $40

TIPS ▼ On the campaign screen, seize one corner of the map first, slowly pushing out along the periphery. The enemy will find it much harder to outflank your position.

Incoming: The Final Conflict

Big Bang theory

Incoming will forever change the way we judge games that follow in this genre. The 3D-accelerated visuals are amazing. Richly detailed terrain and vehicles are enhanced with lighting effects that create a sense of depth and realism outclassing anything I've seen in years. Muzzle flashes reflect off metallic surfaces, missile shots light up the terrain like ballistic glow-wands, exploding structures collapse slowly like decks of cards, and enemy ships set off huge secondary concussion blasts when hitting the ground—not to mention the superb smoke and transparency effects. All the while, you're awash in the rich, vibrant sounds of explosions and blasts.

Destroyed targets explode into hundreds of small polygons.

Combining elements of 3D space-shooters, mech games, flight sims, and even RTS games, Incoming's a nonstop assault on the senses. You're called upon to blast waves of attacking alien ships as you work through a series of increasingly difficult scenarios from behind the controls of various vehicles: fixed gun emplacements, tanks, assault helicopters, jet fighters, and exotic spacecraft too numerous to list.

The Arcade mode, one of five, is a straightforward single-scenario fragfest with the usual power-ups and extra lives. But the game really hits its stride in Campaign mode. Two flavors are offered, one based purely on trigger-finger action, the other incorporating a top-down RTS interface. It's quite rudimentary and unlikely to impress serious RTSers, but it's still a welcome change of pace. Eight-player LAN matches and serial/modem/Internet multiplayer sessions through DirectPlay are supported, as is two-player split-screen play.

Incoming does everything an action title should—with lots of gusto. Factor in the excellent graphics and sound, and you have a game that raises the bar for what PC shoot-'em-ups can accomplish. —*Andy Mahood*

INCOMING

GAMEPLAY:	B
GETTING STARTED:	B+
GRAPHICS:	A+
MULTIPLAYER:	B
SOUND CHECK:	A

A- OVERALL

The most incredible graphics to grace a PC monitor in years.

DEVELOPER:	Rage Software
PUBLISHER:	Xicat Interactive 954-522-3900
WEB:	www.xicat.com
REQUIRES:	P133, 16MB RAM, 50MB HD, 4MB or AGP-compatible 3D card, 2x CD-ROM drive
RECOMMENDED:	P200, 3Dfx or AGP video card
STREET PRICE:	$39

NAM

It's not a war, it's a game!

What's more important in a first-person, historical combat-sim: action or accuracy? Frankly, I wonder whether a first-person game can truly capture the epic savagery of man-to-man combat. If not, then why not aim slightly below the realism belt, shooting instead for pure enjoyment?

Monolith has done just that with NAM, painting a vivid, unrealistic, action-packed picture of the battlefields of Vietnam. Your goal is the single-handed destruction of much of the Viet Cong and North Vietnamese Army via a variety of missions ranging from search-and-destroy to rescue operations. Similar in many ways to Marine Doom (Monolith worked with that conversion's creator), NAM gives you a slew of weapons spanning everything from C4 explosives to M60 machine guns (and, if you're clever, you'll find more stuff along the way). At virtually every turn, you're confronted by hordes of Vietnamese soldiers, dense minefields, toxic chemicals, booby traps, intricate bunker complexes, heavily fortified positions, and even air strikes.

No one said this was going to be easy.

NAM's graphics are a throwback—we thought Redneck Rampage Rides Again would be the last hurrah for the Build engine, but no. All the characters and objects are sprite-based, and there's no dynamic lighting or other recent technical advances. NAM does, however, offer some surprisingly good sound effects, including eerie jungle-noises, radio chatter, even disheartening calls from the enemy.

The eight-player multiplay options (LAN, Internet, modem) include deathmatch, CTF, and co-op "fireteam" missions, with unique maps for each.

While its graphics are certainly dated and the gameplay is a far cry from the brutal carnage epitomizing the war, NAM is nevertheless a worthwhile if superficial glimpse at the barbaric nature of jungle warfare. —*Marc Dultz*

NAM

GAMEPLAY:	C
GETTING STARTED:	C+
GRAPHICS:	C
MULTIPLAYER:	C
SOUND CHECK:	C+

C+ OVERALL

Build-engine graphics, but still enjoyable.

DEVELOPER:	Monolith Productions
PUBLISHER:	GT Interactive 800-610-4847
WEB:	www.gtgames.com
REQUIRES:	486/DX4 100MHz, 16MB RAM, 60MB HD, 4x CD-ROM drive
RECOMMENDED:	P133, 32MB RAM, 8x CD-ROM drive
STREET PRICE:	$50

Total Annihilation: Battle Tactics

Interactive RTS primer

Cavedog just doesn't get it with these expansion packs. Its first, Core Contingency, contained so many new units, missions, maps, and features, it could've been a full-fledged sequel. Its second, Battle Tactics, aims to help newbies master TA.

Starting with tons of units lets you get right to the battles.

It's an odd concept to ship an expansion pack for newbs, although TA—with the complexity and depth its 245 units offer—could use a strategy treatise.

The 46 Arm and 54 Core missions definitely succeed on one level: You'll know every hotkey, shortcut, and feature of the TA interface when you're done. You'll also learn such basic RTS conventions as grouping units, using radar, attacking in formations, building a well-defended base, and more. While there's no unifying plot to the missions (divided into categories according to length), they can be lots of fun, even for experienced TA players. Often you get the pleasure of immediately controlling 50 to 100 units without having to build them, so you can just launch into those famous, epic, explosive battles.

The missions are well balanced between land and sea, feature the newer Acid, Crystal, and Urban worlds, and run the gamut from surviving a siege to striking surgically to escorting units to defending to eliminating every enemy bot. Often you'll capture enemy structures, a slick design move to get Arm players familiar with Core units and vice versa.

You get four new units (also available at **www.totalannihilation.com**) and six good multiplayer maps.

While I would've preferred a multiplayer focus, improved skirmish AI (check out Speed and Madrat's AI patch at **www.annihilated.com/AI_Patch2.exe**), and a couple resource-management and nuke lessons, Battle Tactics will work for newbies, and vets will likely enjoy many of the scenarios if they play on the Hard setting. —*Willem Knibbe*

TA: BATTLE TACTICS

GAMEPLAY:	B+
GETTING STARTED:	A
GRAPHICS:	A
MULTIPLAYER:	A
SOUND CHECK:	B+
OVERALL	B

Enough good scenarios to make it worth the price.

PUBLISHER:	Cavedog Entertainment 888-477-9369
WEB:	www.cavedog.com
REQUIRES:	Total Annihilation, P100, 16MB RAM, 4x CD-ROM drive
RECOMMENDED:	P133, 32MB RAM
STREET PRICE:	$20

WarBirds 2.01

D3D dogfights

Few games make me sweat, curse, and jump around in my seat, and even fewer give me a shaky trigger-finger. WarBirds does, even more so now with this latest update to what's been *PC Games*' Best Online Game of the Year for two years running.

WarBirds is an online-only WWII combat flight-sim that puts you in the cockpit of any of 50 different airplanes. You fly for one of four "countries"—Red, Gold, Purple (known affectionately as "Barneys"), and Green ("Frogs")—helping to capture enemy airfields.

You'll see cool new translucent missile-trails.

Version 2.01's major new feature is D3D support. The visual improvement is amazing—the terrain is much more detailed and natural-looking from all elevations. You can now see external damage on airplanes, which go up in flames gloriously as they trail long plumes of translucent smoke. And when you fire your guns, you'll see it reflected off your canopy and instrument panel.

There are also some major flight-modeling tweaks, resulting in more realistic spins and airframe stress-limits. I dropped my landing gear at too high an airspeed and heard the horrible sound of it tearing off of my plane. (Ouch!)

You also get oil-pressure and temperature gauges, 11 new planes, and several offline training options, so you don't have to train online for $2 an hour.

WarBirds' dogfights (or furballs) can be massive—with dozens of planes of all shapes and sizes taking part simultaneously. There were always at least 150 people on the server (which handles 300) when I logged in, so it's never hard to find the action.

Version 2.01 is much more than a minor update to a great sim beginning to show its age. For this pilot, WarBirds remains the WWII online-sim of choice. —*Steve Klett*

WARBIRDS 2.01

GAMEPLAY:	A
GETTING STARTED:	B+
GRAPHICS:	B-
3D ACCELERATED:	A-
MULTIPLAYER:	A
SOUND CHECK:	B+
OVERALL	A

Still the king of online WWII sims.

PUBLISHER:	I-Magic Online 800-789-1534
WEB:	www.imagicgames.com
REQUIRES:	P90 (P133 for D3D), 16MB RAM (32MB for D3D), 25MB HD, 10MB minimum download (CD available), 9600 modem
RECOMMENDED:	P200, 28.8 modem, joystick, rudder pedals
STREET PRICE:	$2/hour

Beast Wars Transformers

Cartoon cop-out

"Optimus Primal, maximize!" Yup, the *Beast Wars* animated TV series is now a 3D action game—albeit a minimal one.

Two groups of Transformers—the Predacons, who are trying to take over the universe, and the Maximals, peaceful robots trying to stop them—have crash-landed on a planet filled with Energon fields. Both must transform into Beast mode occasionally to prevent overexposure (think sunblock). Play in third-person as one of 10 characters (from either side) and run through 32 levels killing big ugly worms, defeating Predacon/Maximal bosses, and rescuing allies. Multiplay for up to four offers a human element.

Lousy accelerated graphics (the robots look nothing like the TV dudes) are bad enough; add repetitive gameplay, bad voice-overs (not the show's actors'), and no real story, and you've got a pretty crappy game. But don't tell the 8-year-olds it was intended for. —*Danny W. Lam*

Publisher: Hasbro Interactive 800-683-5847
Web: www.beastwars.com
Street Price: $40

D+ OVERALL

Mortal Kombat 4

More Mortal mayhem

Mortal Kombat 4, the latest entry in one of the most popular fighting series ever, makes the move from arcade to PC with style.

Choose one of eight returning characters or pick one of seven new ones (Reiko with his flying Ninja Stars, Kai and his Dodge Ball Fatality, etc.). The action is fast and bloody, and as a twist, characters may now draw weapons such as clubs and swords that can be thrown, dropped, or stolen. You can also run and sidestep. MK4 features a bunch of new Fatalities—those famous ultra-violent finishing moves—but no more Babalities.

You get five different play modes: Practice, Arcade, Team, Endurance, and Tournament. Multiplay is restricted to two players on one machine. Good-looking 3D graphics (D3D cards are supported but not required) and gore galore make this a solid PC fighter, one that plays well on a P150. Just remember to clean up your own blood. —*Danny W. Lam*

Publisher: Midway
Web: www.midway.com
Street Price: $40

A- OVERALL

Pro Bass Fishing

Bass-ically boring

Get used to a lot of casting and whistling because there's not much more to PBF.

There's probably a great computer game to be made about nature's serenity and man's contemplative solitude in the middle of it. Maybe GT Interactive can get started on Walden: The Game for the masses of customers waiting for the perfect game of tree-watching.

Until then, we'll have to settle for Pro Bass Fishing from the WizardWorks gurus who brought the world Deer Hunter. Like the aforementioned blockbuster, PBF offers simplistic, unconvincing, interminable gameplay dressed up as "the common man's computer game."

You sit in a boat on one of six indistinguishable lakes, casting your rod and trolling bait in hopes of snaring a largemouth, smallmouth, or an assortment of stripers, blue gills, crappies, perch, walleyes, and such. Among your mind-bending strategic considerations are what type of lure to use (it's no more challenging than deciding what type of fish you're going after—if you want to snare aggressive striking fish, troll a crankbait, etc.), or maybe such stressful decisions as which part of the lake to sit on. You cope with weedbeds, lily pads, and other cover, as well as snagging and snapping lines.

Most of it is cribbed unapologetically from Sierra's Trophy Bass, which was an infinitely more polished and interesting game (and which offered multiplayer options, something PBF doesn't).

The only redeeming new feature in this me-too entry is force-feedback compatibility, which offers the momentary interest of a reacting joystick when fish bite the lure. This is sort of fun for a little while—especially as a joystick provides a bit more of a realistic rod-battle feel than a mouse system does.

But it's not enough to lift this knockoff out of drudgery. Pro Bass Fishing is a lure you don't want to bite. —*Daniel Morris*

PRO BASS FISHING

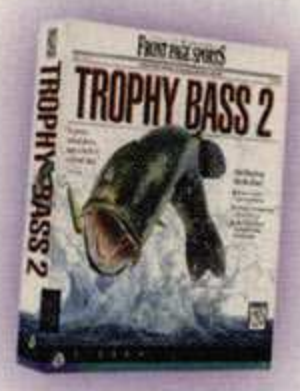
GAMEPLAY:	D+
GETTING STARTED:	C+
GRAPHICS:	C
MULTIPLAYER:	N/A
SOUND CHECK:	C-

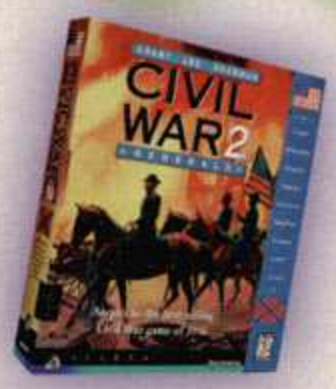
D+ OVERALL

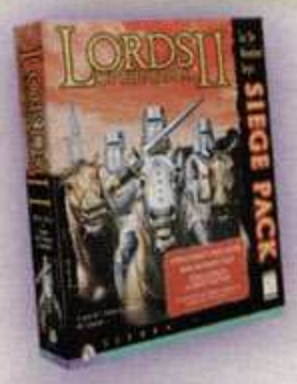
Derivative, shallow example of copycat nature gaming.

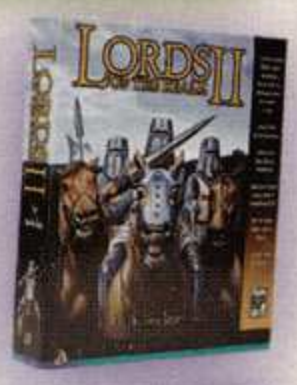
Developer: WizardWorks
Publisher: GT Interactive 800-610-4847
Web: www.gtinteractive.com
Requires: P120, 16MB RAM, 60MB HD, 2x CD-ROM drive
Recommended: P166
Street Price: $30

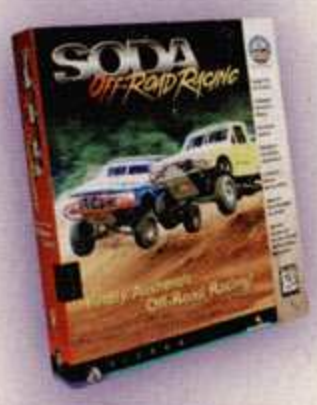
Get a FREE*

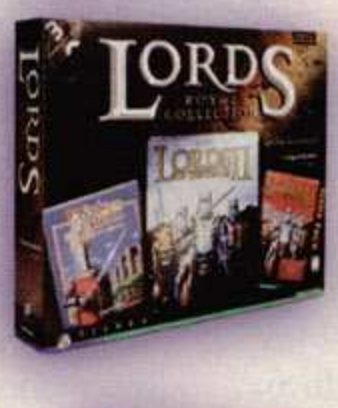


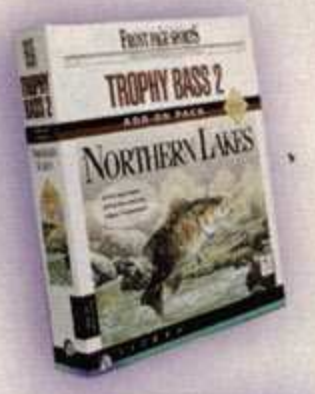


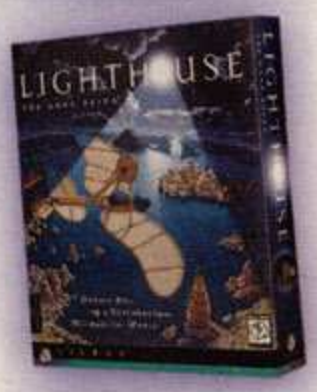


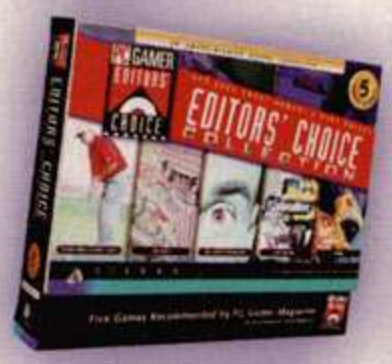


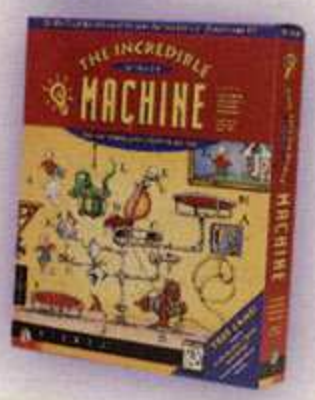


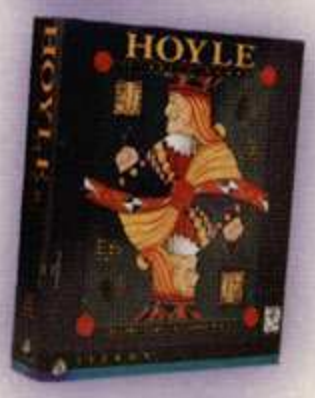












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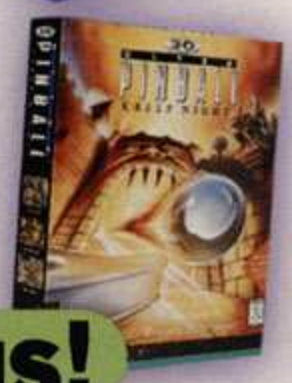

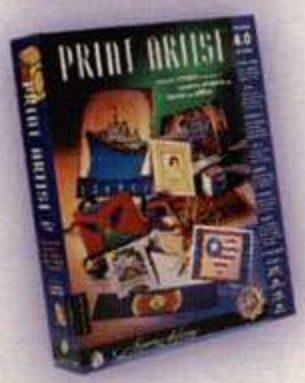

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End Game

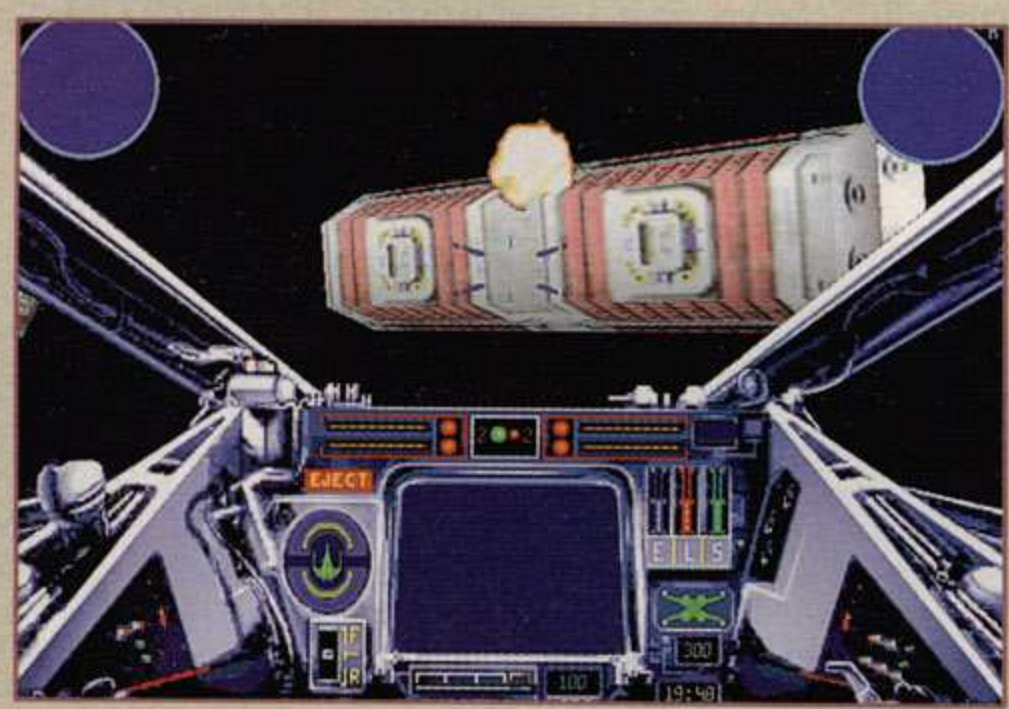
Your indispensable guide to notable add-ons, compilations, updated versions, and other potential bargains

By Peter Olafson

A sad fact of the march of progress is the sacrifice of great old games on the altar of technology. They don't run under Windows 95 or Pentium processors. Or they do run, but at light speed. Or they run at normal speeds, but seem ordinary or prehistoric to an eye trained on lavish 3D textures.

Most publishers never look beyond their latest and greatest to take corrective measures aside from the odd patch. But then, LucasArts has always taken an active interest in its own history (via its Archives series), and it's small surprise that they've taken steps to bring X-Wing and TIE Fighter up to date.

The X-Wing Collector Series isn't just another compilation: It recasts the 122 single-player missions from the classic *Star Wars* sims for the X-Wing vs. TIE Fighter flight engine. They're now native to Win 95 and look good enough to play all over again, with or without the included 3D accelerator support. (A bonus: they included a trimmed-down version of XvT.) Now, how about Rescue on Fractalus? (LucasArts; www.lucasarts.com; $30) **B+**



...while X-Wing and TIE Fighter get the royal treatment in the X-Wing Collector Series.

Interplay's **Ultimate Archives** series puts its good foot forward with its new **Strategy** set. I just can't quarrel with a compilation that includes Sid Meier's Civilization, X-COM: UFO Defense, Heroes of Might and Magic, and, best of all, Sid Meier's Railroad Tycoon Deluxe—a gloriously addictive rail-empire–building sim that hasn't aged a day. These games aren't merely good; they're just about perfect.

I wouldn't look the turn-based Jagged Alliance or M.A.X. in the mouth, either. Indeed, the only obvious weak spots are Conquest of the New World Deluxe—a pretty but ultimately dull Seven Cities of Gold variant—and Dark Colony, an attractive SSI real-time game that, while well-rated (by me, the big dummy) on release, hasn't aged well. But six outta eight ain't bad! (Interplay; www.interplay.com; $35) **A-**

Forget Stellar Forces. This is the way to do a Starcraft add-on: **Insurrection**'s 30 missions (assembled in three campaigns) are lively with action and surprise, smartly designed, and richly customized with speech and story. And that's to say nothing of the 100-plus new multiplayer maps. I'm hooked all over again. (Aztech New Media; www.aztech.com; $30) **A-**

East Front was a potentially great war game that arrived barely loaded—with patches on its elbows and a manual that needed a manual. With the addition of **Campaign CD1**, it's finally loaded for Russian bear with 50 new battles (seven campaigns); six nationalities; the current patch; and, most notably, a proper 192-page manual. Better late than never. (TalonSoft; www.talonsoft.com; $25) **B**

Some games are so good at what they do that they surmount their genres. In pacing, Legend's Gateway text-and-graphic adventures were almost action games. And Blue Byte's **Incubation** was a turn-based game with a distinctly real-time feel.

Incubation gets a big assist from The Wilderness Missions...

That genre-bending continues in **The Wilderness Missions**—a stomping 39-mission Incubation add-on that extends that unique sensibility into three hard-to-master worlds and throws in a level editor for building your own. A required purchase for vets of the original. (It's also bundled with the full game for newbies.) (Blue Byte; www.bluebyte.com; $20 alone, $40 with Incubation) **A-**

Seven Kingdoms was right up there with Age of Empires—Civilization with Warcraft II mechanics—and the deluxe edition follows neatly in its wake. **Ancient Adversaries** provides 10 emerging cultures for you to run (right into the ground) in fascinating detail that, while all-consuming, is never overwhelming. (Remember Destiny?) (Interactive Magic; www.imagicgames.com; $40 as a standalone, free as a downloadable patch for Seven Kingdoms) **A**

I'm not comfortable quoting anything written on the front of a box beyond a game's title, but I'm going to make an exception for **Stars!** Empire's labeled it "the premier space-strategy game," and that's on the money. This "**Multiplayer Twinpack**" re-release—an extra game-CD is included—mingles happy depth with essential accessibility (à la Spaceward Ho!). Who could resist? (Empire Interactive; www.empire-us.com; $30) **B+**

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3D Ultra™ MiniGolf Deluxe
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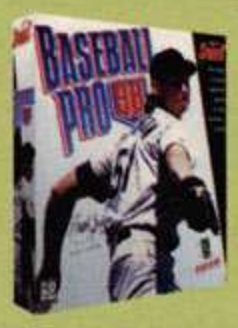

Baseball Pro '98
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STRATEGY & TACTICS CHEATS

Tired of that game throwing crap at you while you're totally defenseless? Staying up nights wondering how to get through that one lousy stage? No problem! Use these codes to whip your games into submission.

SWAT 2

During a mission, type **los** *to toggle off Line of Sight. All characters will now be visible, even if they're not in any of your units' line of sight.*

To select from all the missions, go into the swat2 directory and edit the swat2.ini file. Type the following codes in (each on a different line) under the "Missions Played" heading (you have to have played one mission first), save, then exit. Now all the missions can be accessed through Quick Play.

SM1=1	SM11=1	TM21=1
SM2=1	SM12=1	TM22=1
SM3=1	SM13=1	TM23=1
SM4=1	SM14=1	TM24=1
SM5=1	SM15=1	TM25=1
SM6=1	TM16=1	TM26=1
SM7=1	TM17=1	TM27=1
SM8=1	TM18=1	TM28=1
SM9=1	TM19=1	TM29=1
SM10=1	TM20=1	TM30=1

Pro Bass Fishing

Enter these codes at the prompt where you type in your name. If the text disappears, the cheat is enabled.

pbxray: Shows all fish in fishing mode.

pbpowerpole: Your line won't break.

pbsuperbait: Fish can't resist bait.

Deathtrap Dungeon

During the game, type:

elvis: Unlimited health.
mmmmungo: Strength.
billy: Speed.
caffeine: 100 health.
tools: All inventory.
taxi: Type this code, then hit p to pause the game. You can now use the + and - keys to cycle through all the levels.

M.A.X. 2

In Custom Game, type the following (including the brackets), then press Enter:

[maxspy]: See all enemies (including animals).

[maxstorage]: Get maximum raw material.

[maxsurvey]: See all deposits on the map.

[maxsuper]: M.A.X.es out highlighted unit.

To access all the missions in Campaign mode, open your max2.ini file in a text editor (e.g., WordPad) and find the "setup" section. Change the "0" in "current_campaign_1_mission=0" to "20" and change the "0" in "current_campaign_mission=0" to "50".

For basic strategies and mission hints for the various campaigns, visit our Web site at **www.pcgames.com**.

Tribal Rage

During the game, press and hold Shift, Ctrl, and:

r: Changes the map.

v: Automatic victory (but you won't get any points).

z: Adds 1,000 credits.

The following codes only work with version 1.03. (Go to **www.talonsoft.com** *to download the latest patch.) During the game, press and hold Shift, Ctrl, and:*

f: Removes Fog of War.

s: Removes shroud.

In Campaign mode on the strategic map, press Shift, Ctrl, and e to get a random Event.

NAM

During the game, type:

nvagod: God mode.

nvashowmap: Shows the whole map.

nvablood: Gives all weapons.

nvunlock: Toggles all locks.

nvamatt: Radio man follows you.

nvaclip: Allows clipping.

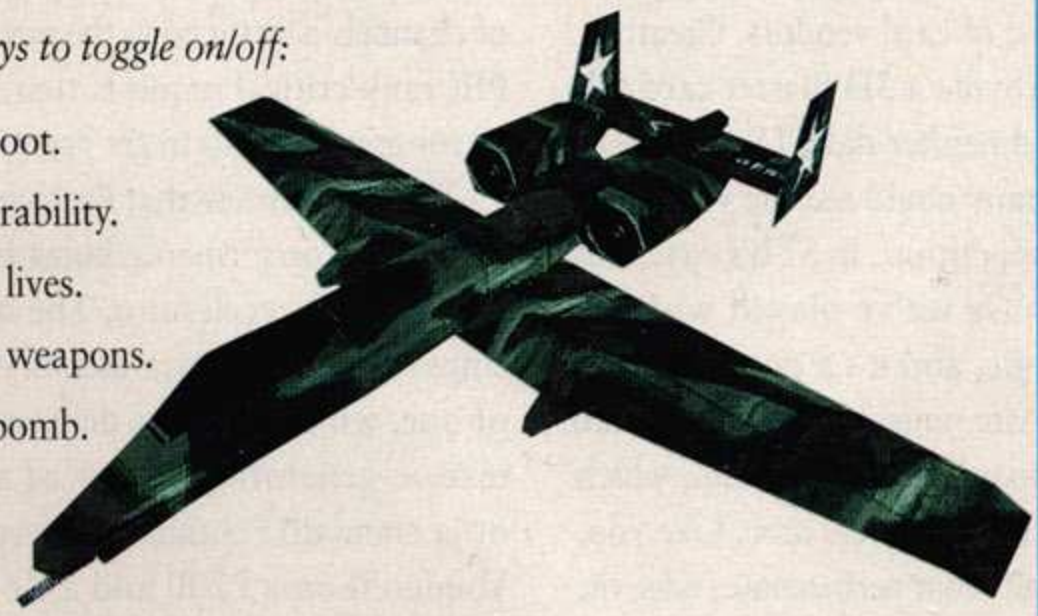
nvalevelxy: Level skip, where "x" equals a one-digit episode number and "y" equals a two-digit level number.

nvarate: Changes frame rate.

Incoming

At the main menu, type **numberonedacrestreet**. *You can now toggle on Cheats, allowing you to use these codes during the game.*

Hit these keys to toggle on/off:



F2: Easy shoot.

F3: Invulnerability.

F4: Infinite lives.

F5: Infinite weapons.

F6: Smart bomb.

Outwars

During the game, type the following codes and press Enter:

macleod: Immortality.

keymaster: Unlimited jet-pack fuel.

dirtyharry: Unlimited ammo.

buzz: Glider wings.

framerate: Frame-rate counter.

phantom: Spy on creatures using the F11 and F12 keys.

snipsnip: Change your character's gender.

gohome: Reset to the start position.

thrasher: Thrasher mode—shows all your enemies on radar.

weaponcam: Weapon optics display. Follows your fired rounds, like the cameras in smart bombs.

Descent: Freespace

During a mission, type **freespacestandsalone** *to access all movies in the Tech Room. As with the following code, you'll get a HUD message indicating it worked.*

Also during a mission, type **www.volition-inc.com** *to enable the following codes. You must hold the ~ key while pressing the keys below.*

Shift-c: Toggle availability of countermeasures for all ships.
k: Kill target.
Alt-Shift-k: Apply ~10% damage to target.
Shift-k: Destroy targeted subsystem on target.
Alt-k: Apply ~10% damage to self.
i: Toggle invulnerability.
Shift-i: Toggle invulnerability on target.
o: Toggle Descent-style physics.
w: Infinite weapons for player.
Shift-w: Infinite weapons for all ships (including player).
c: Message enemies.
g: Mark all primary goals complete.
Shift-g: Mark all secondary goals complete.
Alt-g: Mark all bonus goals complete.
9: Scroll forward through all secondary weapons.
Shift-9: Scroll backward through all secondary weapons.
0: Scroll forward through all primary weapons.
Shift-0: Scroll backward through all primary weapons.
r: Issue rearm request for target (or for player, if no target).

Small Soldiers

During the game, hold down Shift, Ctrl, s, and x, let go of the s key, and wait three seconds. You should see a blinking red line on the bottom-left corner of the screen. Type these codes, then press Enter.

mcleod x: x=1 activates god mode; x=0 disables it.

toys #: Adds number of toys you want (e.g., toys 15).

clear: Clears all fog.

Voodoo II Shoot-out

3Dfx's mojo gets accelerated

By *PC Games* Staff

If it's true what software publishers say, that the ranks of hardcore gamers are only 6 million strong, that's an awful small pond to stake your fortunes on. But this market is exactly where 3Dfx and its 3D video accelerators dominate. 3Dfx won't say how many Voodoos it's sold, but no self-respecting hardcore gamer boots up Quake II or Unreal without the benefit of a Voodoo card. To stay ahead of the competition, 3Dfx has brought us Voodoo II—promising double the performance of the original and full support for running two Voodoo IIs together in one machine.

Now that the initial explosion of new Voodoo IIs has subsided, we decided it was time to see how the available cards stack up. Well, you'll never find a more egalitarian group than the Voodoo IIs on the market today. In the rush to get their products to market, it seems most card makers have done little more than design quick knockoffs of 3Dfx's original reference models and drivers. And we've tested those reference boards. It's a testimony to how swiftly video boards become obsolete that card makers would rather copy 3Dfx's initial design than risk losing market share to competitors while taking the time to develop a better product. Mind you, 3Dfx's reference designs are top-notch in quality and performance, but we weren't prepared for almost exactly the same performance from each Voodoo II we tested.

You can buy them in 8MB or 12MB versions, you can pay more or you can pay less—but in most cases, you'll be buying the same thing. Gamers who shop around can find the 12MB Voodoo II accelerators we tested for anywhere from $189 to $299. You can slice off another $30 if you happen to come across rebate offers, which are fairly common. The 8MB boards generally go for about $50 less than their 12MB siblings.

So which Voodoo II is the best buy? Do you even need Voodoo II?

To answer those questions, we evaluated Voodoo II boards from major and minor players, including Best Data, Canopus, Diamond, Guillemot, and Metabyte. We tested 8MB and 12MB boards and, when possible, we installed two cards in SLI (scan-line interleave) mode—more on that below—to see what benefits gamers can expect from twin Voodoo IIs. Lastly, we got under the hood to try over-clocking the Voodoo II chipset to determine whether risking an overheated Voodoo delivers a performance edge (see sidebar, next page).

There are a couple of notable omissions from the above list of card vendors. Creative decided not to provide a 3D Blaster card for this roundup, and neither did STB. We tried, but neither company could see the value in a head-to-head competition. In STB's case, this is a shame, because we've played with the 12MB Black Magic, and it's a good product. Another unfortunate omission is the Obsidian AGP Voodoo II boards from Quantum, which weren't available to us at press time. Like you, we're curious about what performance edge the AGP's 66MHz bus will add when compared to the PCI's 33MHz interface—especially the single-card/dual-Voodoo II SLI model.

What's Different About Voodoo II?

Unlike the Voodoo I, which was processor-independent in the performance equation, Voodoo II performance is directly related to the power of your CPU—the faster the better. That means Voodoo IIs will do better in Pentium IIs and K6 2s than they will with older CPUs.

In part, this power increase is due to the way Pentiums and PIIs handle CPU resource requests. Pentiums process requests according to the data channel they come in on, and that set of channels is scanned in the same serial order. PIIs rank critical requests first, making it easier for graphics calls to get priority.

That's not to say that Pentium owners won't see a performance boost from installing a Voodoo II accelerator. The newer 3Dfx chipset has two texture-memory units instead of one, which means it delivers double the texture-generating power of a Voodoo I on a standard Pentium. We tested a 12MB Voodoo II on a P200 and a K6—getting a 10 fps–plus boost in Quake II (see graph). That bonus was cut in half with Unreal and Incoming. But you really don't see wild

Voodoo I vs. Voodoo II on P200/K6

Card	Game	640-by-480
Diamond Monster 3D 4MB (P200)	Quake II	24 fps
	Unreal	15 fps
	Incoming	24 fps
Diamond Monster 3D II 12MB (P200)	Quake II	37 fps
	Unreal	21 fps
	Incoming	28 fps
Diamond Monster 3D 4MB (K6)	Quake II	23 fps
	Unreal	16 fps
	Incoming	24 fps
Diamond Monster 3D II 12MB (K6)	Quake II	34 fps
	Unreal	21 fps
	Incoming	28 fps

Hmmm... Love that Voodoo realism in Omikron.

upswings in performance unless a Pentium II is your platform of choice.

And finally, Voodoo I cards support a maximum resolution of 640-by-480. Voodoo II supports 800-by-600 resolution, 1,024-by-768 if you install two. Which leads us to...

New Bells and Whistles

In the area of raw performance, Voodoo II cards do have a number of extra features that set them apart from Voodoo Is—officially supported two-card installations and speed over-clocking. Developers will take advantage of these capabilities to add greater numbers of textures the way the latest Battlezone patch does or implement new kinds of texture effects such as the bump-mapping process, which delivers more defined surface detail.

Although you could always install two Voodoo I boards in a PC and boost your performance, card companies like Diamond never officially supported such setups, and 3Dfx never promoted the feature. But mindful of speed-freak gamers, one of the things 3Dfx planned for in Voodoo II was making two-card installs easy and supported. So far, all Voodoo II–card makers have supported this SLI mode.

This is how it works. When you have SLI enabled, each card draws every other line on the screen. So card 1 draws the first line of pixels on your screen, card 2 draws the second line, card 1 draws the third, and so on. This means that each card is only working half as hard as it would alone—it's only drawing half the screen it used to. In other words, when you have an SLI setup running in 1,024-by-768, each card is only drawing in 1,024-by-384, alternating every other line. This is why frame rates in higher resolutions in SLI will be comparable to those in lower resolutions using a single card.

Moving on to over-clocking, chipset designers never use the full performance capability of their designs. This practice came about because chipsets that aren't overtaxed are likely to be more reliable over a longer period of time. However, the theory goes that this safety margin is too large—allowing savvy gamers to speed up the chipset timing-clock to get more performance out of their equipment. Many gamers already do this with their Pentium CPUs, and card makers like Canopus include jumpers to over-clock Voodoo II boards as well.

How We Tested

Since frames-per-second is what gamers measure most, that's what we evaluated. Voodoo IIs perform at their best on Pentium IIs, so we used a Falcon 300MHz PII with 128MB of RAM as our main test platform. For those of you curious about what Voodoo II does for your P200 or K6, check the quick-reference graph on the previous page.

To test these cards, we ran three sets of benchmarks—two Glide-based and one D3D. The first is our own Quake II config that turns off in-game sound and runs a timedemo on demo1 to produce a true average-fps mark after actual in-game action, explosions, and screen resolution are considered. The second test is a similar Unreal script developed by Mek at PlanetUnreal. It posts the average fps score after running Unreal's FlyBy demo. The last is Rage's GameIndex benchmark (D3D), which produces an average fps rating using the Incoming demo. You can find the entire list of results in a graph later in the story.

ArcadeFXII • 12MB

RATING: A

Better known as a modem maker, Best Data was late to the party with its original ArcadeFX Voodoo I board. Not making the same mistake

Twin Voodoo IIs and Over-Clocking

The truth hurts

If one Voodoo II card is good, then are two visual nirvana? Only if you believe the marketing hype from card makers. When we set up Voodoo IIs in SLI mode for ourselves, the results were both revealing and disappointing.

In most of our testing, the average frame-rate was either unchanged or changed only slightly. The real advantage of the SLI setup was being able to reach that next level of 1,024-by-768 resolution with silky-smooth frame-rates. Whether this is worth sucking down a precious PCI slot we leave up to you and your pocketbook.

When we tried over-clocking the two Wicked3D boards, we were shocked to see the operation yielded no performance increase at all. Why doesn't over-clocking or SLI significantly affect the frame rate? We investigated further and were in for a surprise.

The Voodoo II is simply too fast for the CPU. When you're running a 3D game, there's a two-step process going on. The first step is preparing a blueprint of what is to be displayed. Once this is done, the blueprint needs to be built, or displayed, on your monitor. The CPU does all the calculating of where everything should go, then it passes that blueprint information on to the 3D card to do the rendering. The problem is that the poor weakling CPU (a 300MHz Pentium II!) can't calculate the geometry of the scene fast enough for a stock un–over-clocked card to break a sweat rendering it. Making the Voodoo II faster by over-clocking doesn't change the fact that it's still spending time waiting for the CPU to cough up the next frame. So unless you have a PII 400 or higher, don't unnecessarily risk damaging your Voodoo II by over-clocking it.

—Matt Holmes

twice, Best was right up there with the rest of the early pack when it came to Voodoo II. While you won't find anything innovative about the ArcadeFX or its features, you'll find it's priced less than a comparable card by Creative or Diamond. And before you start worrying about reliability, the ArcadeFX installed without a hitch and has worked flawlessly.

Although you're supposed to wipe all Voodoo drivers off your hard disk prior to installing a Voodoo II board so Win 95 doesn't become confused and refuse to accept the new drivers (see sidebar below), we decided to see what would happen if we left the drivers from the existing 4MB Jazz Adrenaline Voodoo Rush board where they were. To our surprise, Win 95 didn't have a cow. Subjectively, the ArcadeFXII delivered Glide and D3D performance that seemed considerably zippier than the Rush card it replaced.

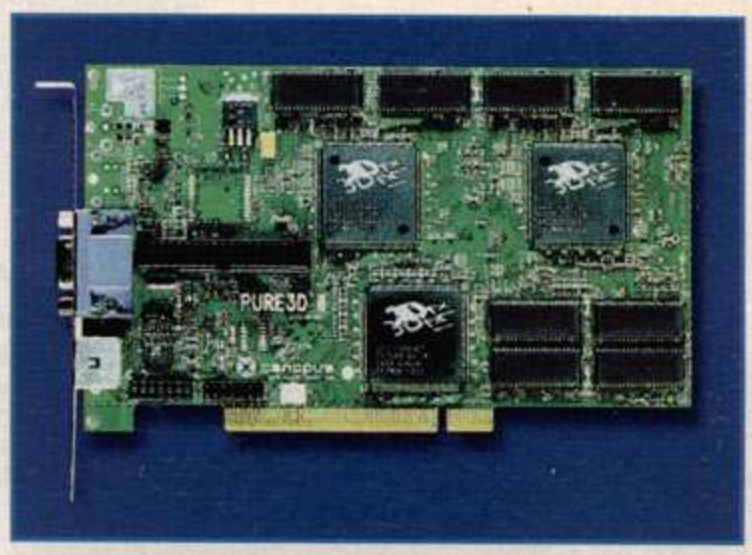
The ArcadeFXII is a solid contender and one you should consider. Its price is the lowest of any Voodoo II board. After a recent rebate, this card could be had for $159! That's a steal. (Best Data; 818-773-9600; www.bestdata.com; street $189)

Pure3D II LX • 12MB

RATING: A

Canopus builds some of the highest-quality graphics cards you'll find—period. When it comes to quality of materials, workmanship, and driver reliability, Canopus is usually ahead of the pack. The company's known for going beyond reference designs and rethinking features so that its boards deliver something extra. The original Pure3D—with its extra 2MB of texture memory—is a perfect example.

The 12MB Pure3D II adds a video-out feature and makes it easy for you to over-clock the speed of the board. It even includes a chipset fan to keep this animal cool if you do over-clock—though, in a commercial departure for Canopus, the company immediately put out a



less expensive (by $30) LX model without the video-out or the fan. Otherwise, the two models are identical, and you can still over-clock the LX from 66MHz to 100MHz.

The LX installed flawlessly into a 300MHz Pentium II and pumped out numbers slightly better than other Voodoo II accelerators we tested. We also attempted to install a second Canopus in SLI mode—filling up the last available PCI slot. Unfortunately, the Pentium II wasn't happy with the second LX and we had to suffer through some resource conflicts. The

Bad Mojo

If you already have a Voodoo I in your system and you're getting ready to install a Voodoo II, you have a problem. In our experience, Win 95 goes into a spastic fit when it has Voodoo I drivers available to it and you plug in a Voodoo II board. Win 95 will either not accept the Voodoo II drivers, or if the OS does accept them, you might get a "Voodoo II not found" error message.

To prevent this frustration, do these things before you shut off your PC and yank out the Voodoo I:

(1) ***Remove the old Voodoo installation.*** Go to Add/Remove Programs in Control Panel. Scroll down the list of software. If you see a listing for your Voodoo I, select that listing and click Remove. Next...

(2) ***Delete .INF files.*** Go to C:\Windows\Inf\Other. In this directory, you'll see an .INF file named after your brand of Voodoo I card (e.g., Pure3D.INF). Delete it. Check for any other Voodoo .INF file that may be there. If you find one, delete it. It's important to be careful if you have Diamond cards installed. Since each of these .INF files starts with "Diamond," look carefully to make sure you delete only the .INF file for the Voodoo board. For security, also check C:\Windows\Inf. Next...

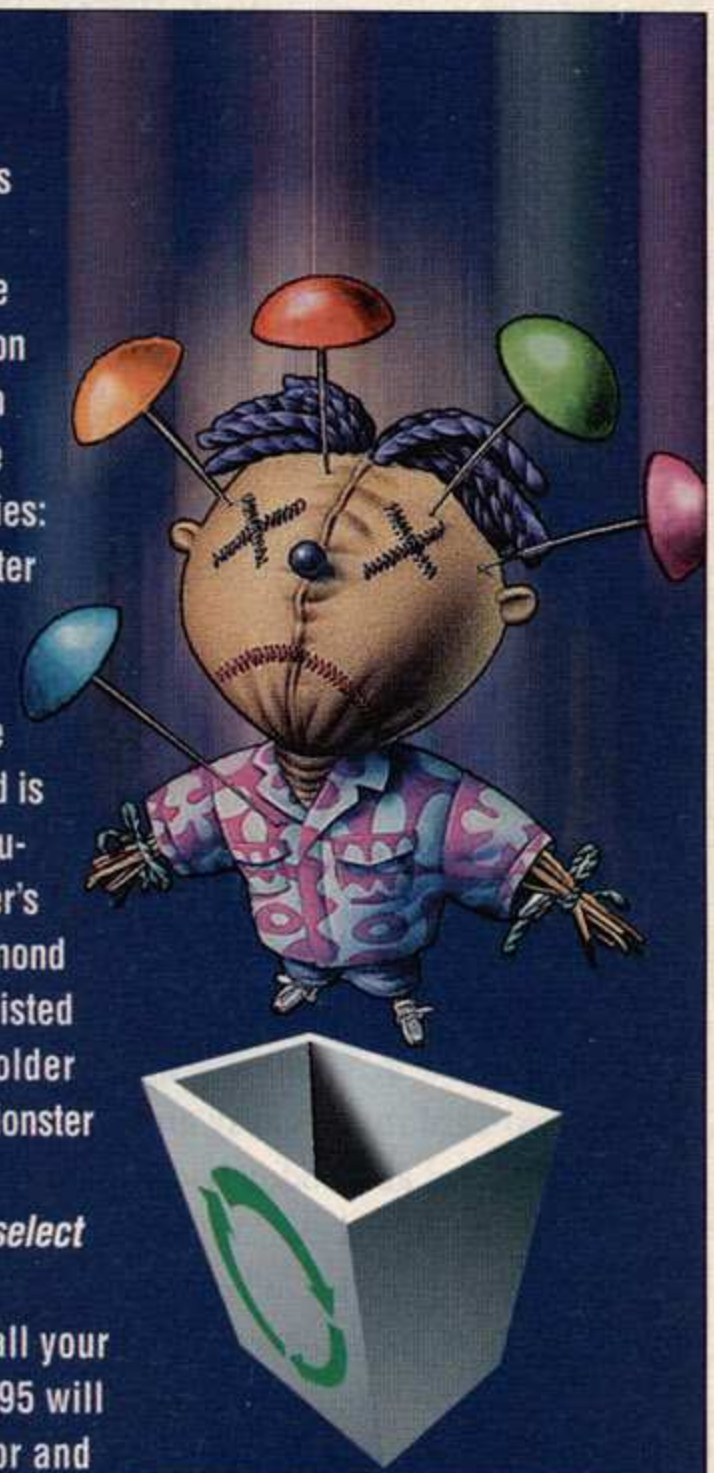
(3) ***Delete the Registry listing.*** One big word of caution: Respect the Registry, go there with reverence, and don't ever mess around in there for fun—you'll be sorry. The System Registry is where Win 95 stores all the critical information about your hardware and software. At this point, you'd be well advised to check the Win 95 help files on how to back up your Registry file, and then copy that file to a diskette. Once you have the backup, delete ONLY the following entries:

Go to the Start menu and select Run. Enter Regedit and press OK. Open up the tree listed as HKEY_LOCAL_MACHINE. Open up the tree listed as SOFTWARE. Delete the 3Dfx Interactive folder. If your Voodoo I card is the only product you've installed of a particular manufacturer's, look for the manufacturer's name and delete that listing. As in the Diamond example above, if you see another folder listed as Diamond, open it and look for a subfolder listed as Monster 3D, and delete only the Monster 3D subfolder.

(4) ***Go to Registry on the menu bar and select Exit.*** The Registry will close.

That's it. Shut down your PC and install your Voodoo II board. When you restart, Win 95 will plug-and-play detect the new accelerator and ask for drivers.

—George T. Chronis



problem was solved by removing all the PCI cards in the PC and reinserting them in a different order. After that, everything worked fine.

This was our first SLI installation, but what we learned held true for the next three we attempted. Paying the extra dollars for a

The wild blue yonder in Fighter Squadron is looking more attractive thanks to Voodoo II acceleration.

second card didn't seem worth it. Although one staff member thinks playing Quake II in 1,024-by-768 resolution at 60 fps is worth any price, the rest of us weren't so moved.

There's no difference in the fps in 640-by-480 resolution between single– and dual–Voodoo II installs, and the extra 4 fps to 12 fps gained by SLI setups in 800-by-600 resolution doesn't seem all that significant during gameplay. So unless you're stroking your ego, there isn't much mileage to be had from investing in two Voodoo II boards. (Canopus; 888-868-2533; www.canopuscorp.com; street $279)

Monster 3D II • 8MB/12MB

RATING 8MB/12MB: A/B+

On reputation alone, Diamond is the player to beat. The original Monster 3D was available in greater numbers than other early Voodoo I boards and proved to be rock-solid reliable. Even today, it's still available—sometimes for as low as $60, if you get a rebate deal. So with a major success under its belt, Diamond is looking for a repeat performance in Voodoo II. Despite being faced with a greater number of competitors this time around, Diamond has been smart to not mess with the original formula—solid features, regular driver updates, and retail discounts.

The Monster 3D II comes in both 8MB and 12MB versions. Strangely enough, however, we didn't experience much of a difference in performance between the two. In fact, in both single- and dual-card installs, the 8MB model came out slightly ahead of the 12MB version. We're stumped. To make sure the 8MB we got

from Diamond wasn't a fluke, we booted up one of 3Dfx's 8MB reference cards and got the same single–Voodoo II results. But for now, we find it hard to recommend the more expensive (by $50) 12MB Monster 3D II over its 8MB sibling, especially when you can get 12MB models from other makers for less. (Diamond Multimedia; 800-727-8772; www.diamondmm.com; street $249/$299)

8MB Voodoo IIs

Card	Game	640-by-480	800-by-600	1,024-by-768
3Dfx Reference Board 8MB	Quake II	59 fps	55 fps	—
	Unreal	40 fps	28 fps	—
	Incoming	58 fps	39 fps	—
Diamond Monster 3D II 8MB	Quake II	59 fps	57 fps	—
	Unreal	39 fps	27 fps	—
	Incoming	57 fps	39 fps	—
Diamond Monster 3D II 8MB (SLI)	Quake II	60 fps	60 fps	59 fps
	Unreal	43 fps	41 fps	34 fps
	Incoming	58 fps	58 fps	55 fps

Maxi Gamer 3D² • 12MB

RATING: F

We genuinely liked Guillemot's Voodoo I–based Maxi Gamer 3D. Although it was shipped with 3Dfx reference drivers, the original Maxi Gamer was as solid a performer as the Monster 3D, and you could find it for quite a bit less at some chains such as Electronics Boutique. So we were looking forward to the Voodoo II model.

Unfortunately, our experience turned into a nightmare.

Although Win 95 recognized the board and its drivers, every time we tried to load a Glide or D3D game, we got the same "Voodoo II board not found" error. So we yanked the Maxi Gamer 3D² and wiped every Voodoo driver on the hard disk. After this, we reinstalled the card and the drivers. Same problem.

We repeated the effort on two more PIIs with updated Guillemot and 3Dfx drivers, as suggested by Guillemot tech-support. Same result. After three more phone calls, we were never able to get back in touch with the tech-support person to request a replacement board. The Maxi Gamer 3D² might be priced competitively, but this is unacceptable behavior for a shrink-wrapped retail product. We graded accordingly. (Guillemot; 800-967-0863; www.guillemot.com; street $259)

Wicked3D • 12MB

RATING: B+

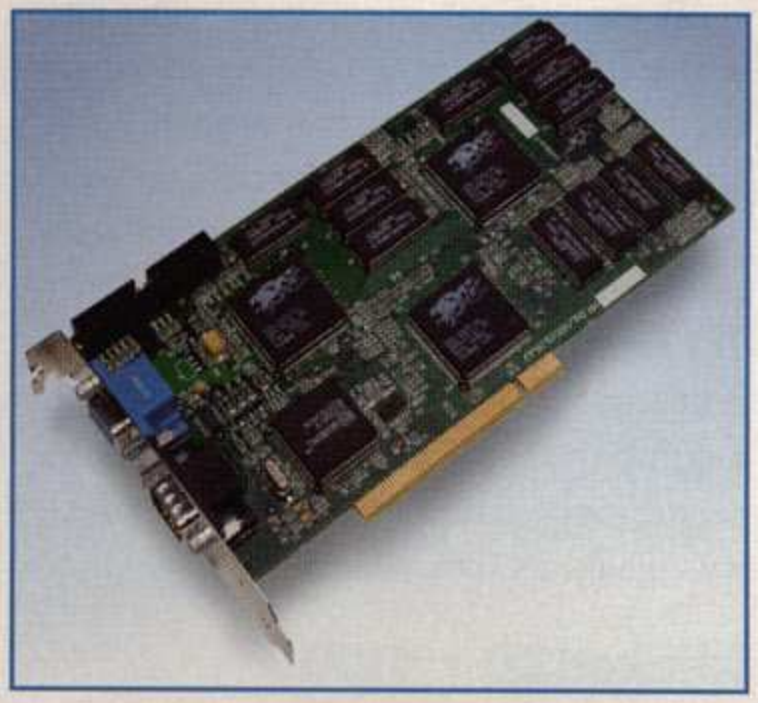
Heard of Metabyte? That's okay, neither had we. But in the Wicked3D, Metabyte has a very good Voodoo II accelerator at a decent price. The Wicked3D doesn't offer any different hardware features, but the company claims to have an expert knowledge in writing drivers to boost performance.

Put simply, Metabyte's drivers supposedly work in conjunction with DirectX 5.0 (although the company won't say whether it will support DX6) to optimize floating-point operations and enhance Direct3D performance. Mind you, this optimization is supposed to do nothing to speed along Glide games such as Quake II or Unreal. But these drivers should've boosted Incoming's numbers compared to those of other cards in the test. They didn't.

The Wicked3D turned in solid numbers, but nothing to brag about in a newsgroup. At $269, it's priced below the mainstream competition, but not that much less. (Metabyte; 510-499-9700; www.wicked3d.com; street $269)

Which Voodoo II to Buy?

Until prices fall later this year, you may want to hold off on a Voodoo II purchase, especially if you're already using a Voodoo I accelerator and/or don't have a Pentium II or a K6-2 system. But if you have your heart set on forking over the cash for a Voodoo II, you have choices. If you want the security of an established mainstream accelerator maker, it'll cost you closer to $300. If you're willing to take a risk on a smaller player, you can save up to $100.



For our money, Best Data's ArcadeFXII is the clear winner. In a flood of me-too Voodoo IIs, the ArcadeFXII's low price can't be beat. Even if you have a P200 or K6, Best Data is making it hard to not upgrade. Likewise, if 1,024-by-768 resolutions and consistently high frame-rates across resolutions are important to you, then the ArcadeFXII is even more attractive when you consider the cost of buying two Voodoo IIs.

If you want assured quality, performance, and reliability, you can't go wrong with Canopus or Diamond. The Pure3D II LX is well priced, as is the Diamond Monster 3D II, if you take advantage of rebate deals.

Since Heretic II uses the Quake II engine, you'll get the best 3D performance out of the game using a Voodoo II board.

And yes, there are other 3D contenders on the horizon: nVIDIA's TNT, S3's Savage3D, PowerVR's next-generation chipset, and 3Dfx's own new Banshee Voodoo derivative. But until we get our sweaty hands on products using those chipsets, we can't tell you how good they are or might be. For now, Voodoo II is the speed leader, and unless you pay too much, you can't go wrong. ■

12MB Voodoo IIs

Card	Game	640-by-480	800-by-600	1,024-by-768
Best Data ArcadeFXII 12MB	Quake II	59 fps	55 fps	—
	Unreal	39 fps	27 fps	—
	Incoming	56 fps	38 fps	—
Canopus Pure3D II LX 12MB	Quake II	59 fps	57 fps	—
	Unreal	39 fps	28 fps	—
	Incoming	57 fps	41 fps	—
Canopus Pure3D II LX 12MB (SLI)	Quake II	60 fps	60 fps	59 fps
	Unreal	43 fps	40 fps	33 fps
	Incoming	58 fps	58 fps	53 fps
Diamond Monster 3D II 12MB	Quake II	59 fps	56 fps	—
	Unreal	39 fps	28 fps	—
	Incoming	56 fps	40 fps	—
Diamond Monster 3D II 12MB (SLI)	Quake II	60 fps	60 fps	59 fps
	Unreal	43 fps	40 fps	33 fps
	Incoming	58 fps	58 fps	55 fps
Wicked3D 12MB	Quake II	59 fps	55 fps	—
	Unreal	39 fps	27 fps	—
	Incoming	56 fps	39 fps	—
Wicked3D 12MB (SLI)	Quake II	60 fps	60 fps	58 fps
	Unreal	42 fps	40 fps	32 fps
	Incoming	58 fps	58 fps	52 fps

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Velocity 128 (8MB)

RATING: B

Last year, we got our first look at the 4MB Velocity 128 2D/3D card. We immediately took a liking to it, mostly for the RIVA 128 chipset from nVIDIA that powers it. As combo video-cards go, the Velocity's strong 2D performance and serious brute strength in the Direct3D department were impressive. Almost a year later—not very long in the video-card business—nVIDIA has released an updated chipset called the RIVA 128ZX, and STB is using it in its new 8MB Velocity.

Hold the original and new Velocity side by side and you won't notice a difference unless you look closely at the RIVA chipset. Both are 128-bit processors, but the 8MB Velocity has a larger 250MHz RAMDAC (up from 230MHz) to support resolutions up to 1,600-by-1,200 and refresh rates up to 160Hz. Consider the doubled RAM and improved, more efficient drivers, and the difference between these Velocities is that the 8MB version has been pumping some iron.

If you already have a Velocity, the 8MB isn't worth trading up to. But if you're in the market for a strong 2D/3D PCI or AGP video board, it's worth considering. We looked at the PCI model, and the biggest problem was that we installed it into a system that was already running the original Velocity. Win 95 had a cow trying to make sense of the 8MB, so all drivers and utilities related to the original installation had to be terminated. After the purge, the 8MB Velocity and Windows got along fine.

In the performance department, Jedi Knight turned in an average frame-rate of between 40 fps and 75 fps, up from 30 fps to 60 fps with the original Velocity. In 800-by-600 resolution, the 8MB managed from 30 fps to 65 fps, and 22 fps to 50 fps in 1,024-by-768 resolution. We attempted to run Quake II using nVIDIA's still-unsupported GLQuake patch for the original Velocity. Unfortunately, Win 95 couldn't be coerced into accepting the .INF file from the patch.

In short, the 8MB Velocity is a faster sprinter than its older brother, but the difference isn't all that great—especially when you can find the original Velocity for around $99 these days. And by the time you read this, the Velocity 4400, using the next-generation RIVA TNT chipset, should be in stores. These facts should make you carefully consider buying the 8MB Velocity. (STB; 800-234-4334; www.stb.com; street $180) —*George T. Chronis*

The 8MB Velocity quickens the D3D pace.

StarFighter PCI

RATING: A-

With all the buzz about the addition of Advanced Graphics Ports (AGP) to newer PCs, you could almost consign the humble-yet-functional PCI slots in your machine to the graveyard. Well, not yet.

Real 3D, which codeveloped the Intel740 3D chip for AGP video cards, has come up with a PCI version of its StarFighter AGP card. Sporting 16MB of onboard memory—allocated half to frame buffering and half to texture memory—this PCI sibling doubles the original's amount of onboard RAM. The extra RAM is needed to replicate the performance of the AGP StarFighter—what Real 3D is calling "AGP on a board"—and in large measure, it's succeeded.

Real 3D brings the I740 to PCI motherboards.

On the AGP card, the I740 kicks out textures to system memory. On the PCI card, there's a "bridge" chip that intercepts those AGP calls and routes them to the onboard texture-memory.

Because we just looked at the AGP version of the StarFighter (July/August 1998), we thought it would be good to put the PCI version through the same battery of rough tests, using a similar machine (a Pentium II 300 with 48MB of RAM). What we found was somewhat predictable. The PCI throughput didn't match the AGP version's, but it held its own nicely. For instance, when we tried out the same Quake II Glide driver that yielded 25 fps on the AGP version, we got slightly more than half that, 13.7 fps. That's about what you would expect given that the PCI slot's 33MHz bus speed is half that of the AGP's 66MHz.

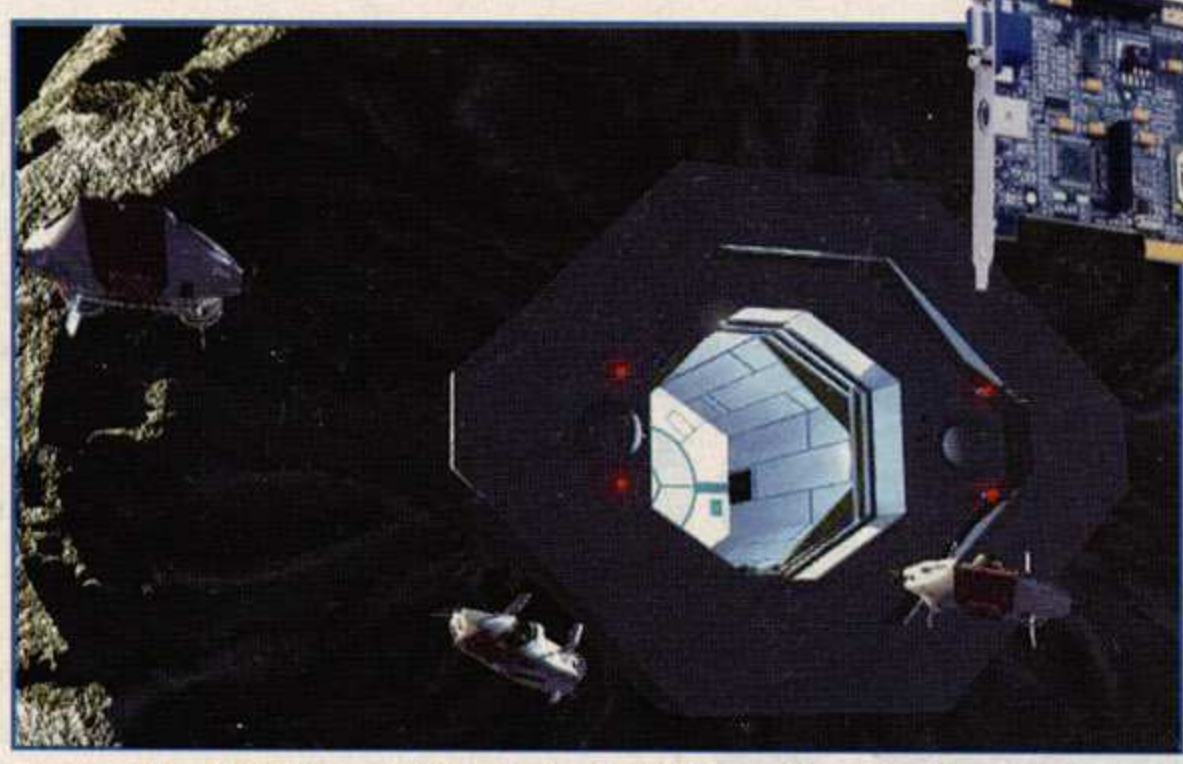
As it did with the AGP model, G Police ran smoothly at 1,280-by-1,024 with no performance degradation at all. And Jedi Knight, whoa! Great frame rates at high resolutions—a steady 28 fps to 30 fps at 1,280-by-1,024, and 56 fps at 800-by-600—just about what we got with the AGP StarFighter. Of course, the PCI StarFighter doesn't have that desirable 3Dfx chipset many gamers lust after, and the fairly hefty $250 list price is a deterrent. But if you lack AGP and want first-rate Direct3D-based gaming, the StarFighter PCI gives you serious bang for all those bucks. (Real 3D; 800-393-7730; www.real3d.com; list $250)

—*Don St. John*

Matrox Mystique G200

RATING: A

Before the 3D revolution, when it came time to choose a 2D graphics card, a Matrox board was almost always the recommended choice for performance and reliability. Then 3D hardware acceleration caught on and Matrox failed to keep up with newcomers like 3Dfx and nVIDIA. Well, the dry times are over—Matrox is back. The new Mystique G200 accelerator board combines top-class 2D performance and—more importantly these days—honest-to-goodness top-notch Direct3D acceleration in one slick, low-priced package.



The G200 is one of the fastest 2D/3D combo video-boards.

The board is an AGP 2x accelerator, which means the G200 can boost its bus speed from 66MHz to 133MHz. That means if you only have a PCI motherboard, this video card is not for you. Installation was easy under Win 95's plug-and-play. The unit's 128-bit dual-bus architecture accelerates 2D and 3D, and it features a useful video-out (no video-in) capability. Moreover, you can even view 1,024-by-768 content on your TV, though text looks atrocious given the differences in how TVs and monitors scan pictures.

"Yeah, yeah, how did it play?" you ask. Superbly. Using beta hardware and drivers, the Mystique G200 turned in impressive frame rates. Moreover, the D3D textures are as good as anything we've seen from 3Dfx or nVIDIA—with better color depth and surface detail in Jedi Knight and G Police. A Glide driver for Quake II is promised, too.

Our only complaint was with what seemed to be slightly sawtoothed anti-aliasing—though this was a minor annoyance likely to be missed by most players, and it disappeared at higher resolutions.

In Jedi Knight at 640-by-480, the board delivered a peak rate of 82 fps, an average of about 70 fps, and very briefly bottomed out at 42 fps when the action got hot and heavy. When we cranked the resolution up to 1,280-by-1,024, the unit still cranked a consistent 29 fps. As Jack Nicholson says, that ain't bad.

Matrox has always been a gem about delivering solid drivers, and even the Mystique G200's beta drivers seemed stable in our tests. If you need a new AGP board, you'd be hard-pressed to find a better all-in-one accelerator for the money. (Matrox; 800-361-1408; www.matrox.com; street $149)

—David Gerding

Panther XL

RATING: A-

Every joystick has its own personality—looks, habits, attitudes. Some are just working joes, nice enough guys, nothing to write home about. Some are all glitz but kinda flaky when tough times actually come, and some are just so darn boring you never learn anything about them. Not the Panther XL from Mad Catz. In the joystick socio-tech tableau, the Panther XL is a sassy, hot-looking 19-year-old.

Yeah, the Panther looks pretty cool, all right...and as long as it does the job, there's nothing wrong with buying a controller for its looks. But the Panther is a rock-solid control device, incorporating a rubber-booted, reasonably stiff six-switch joystick on one side and a glowing, removable, jelly-red trackball on the other. Also built in are five contour-flush buttons of better ergonomic layout than those in the somewhat cramped SideWinder base. The trackball portion is, in effect, a mini Assassin 3D that controls the mlook function in Quake configurations, or it can be your rudder control in flight sims. The combination of joystick and trackball facilitates some difficult and frighteningly effective moves—slashing attacks and circle-strafing, just like its FP Gaming ancestor. The Panther XL is satisfying to use, and the firm, booted joystick doesn't feel like it's going to break any time soon.

Two minor downsides: a dinkoid little left-thumb throttle positioned just microns short of perfect, and the unfortunate placement of an unprotected switch right near the right pinky. Do not, for example—and this is just an example, it's not like I actually did this in front of a bunch of other players who howled their butts off with laughter—assign your afterburner here. It's likely to get flicked on in a tough situation, thereby instantly, stupidly, and fatally sending your space superiority fighter slam-bang into the side of a friendly freighter at Mach 79 or thereabouts.

The bottom line: There'll always be times to call on a SideWinder or Gamestick, but the Panther plays a little rougher, looks a little better, and is slightly cheaper. (Mad Catz; 800-831-1442, ext. 303; www.madcatz.com; street $60) *—Chris Hudak*

TECHNOBABBLE S.O.S.

Dual-boot Duke, cable-modem Quake

By Patrick Marshall

Q I usually boot up through Win 95, then shut down into MS-DOS, which runs all my games like Duke Nukem 3D perfectly. Besides using step-by-step confirmation of each line and pressing N at the WIN command, how do I get Win 95 to load up the Autoexec.bat and Config.sys files without loading Windows?

Jeff A. Tindle, via email

A *The easiest way to boot up in MS-DOS mode is to set up your Win 95 workstation for dual booting to DOS/Win 95. If you chose dual-boot mode when you installed Win 95, you're all set. When it says Starting Windows 95, press F8. Then press F4 or select Previous Version of MS-DOS from the list of boot options. If you didn't set up for dual boot, open the MSDOS.SYS file (hidden in your root C: directory) in an ASCII text-editor such as Notepad, and locate the line that says BootMulti=0. Change the 0 to a 1, press F8 at Starting Windows 95, and you're in business.*

Q At home, we're running a twisted-cable network, sharing one Internet connection via a WinGate proxy server, with one computer designated primary server. Our Net connection's supplied by a cable modem; thus we only have one IP address. The non-server computers can access the Net and send mail, but we haven't been able to play games like Quake simultaneously because they require individual IP addresses. Is there a way to play such games through a proxy server on multiple computers using one IP address?

Mike Cains, via email

A *I think you're out of luck. IP "masquerading" allows a proxy server with one IP address to manage Net connections for multiple workstations—great for outgoing connections. But for incoming or interactive connections, the software at the other end has to know which workstation it's connected to. Accordingly, all Internet-playable games I know of require a unique IP address per computer.*

Send S.O.S. queries to *sos@pcgames.com*.

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Monitor	ViewSonic G790 19-inch	ViewSonic; 800-888-8583; approx. $845	A
CD-ROM drive	Sony CDU-711 32x	Sony Corp; 800-476-6972; approx. $99	A-
Sound card	Montego A3DXstream	Turtle Beach; 800-233-9377; approx. $99	A
Speakers	ACS55 Power Gaming System	Altec Lansing; 800-258-3288; approx. $150	A
Joystick	F-16 Combatstick	CH Products; 760-598-2518; $70	A+
Gamepad	SideWinder Gamepad	Microsoft; 800-426-9400; $39	A+
Modem	SupraExpress 56	Diamond; 800-727-8772; approx. $99	A
SVGA card	Stealth 3D 2000 Pro	Diamond; 800-727-8772; approx. $160	A
2D/3D video card	Velocity 128V	STB; 800-234-4334; approx $175	A
Key add-ons	Pure3D II LX video accelerator	Canopus; 888-868-2533; approx. $250	A
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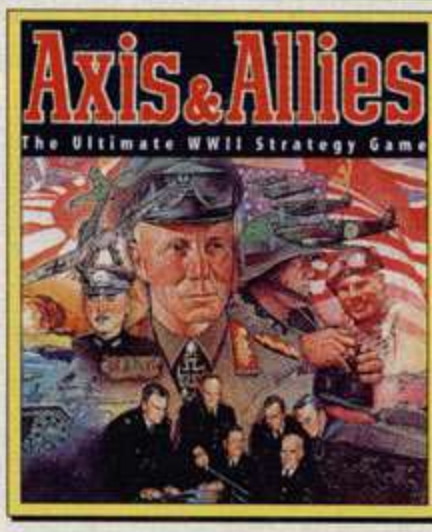

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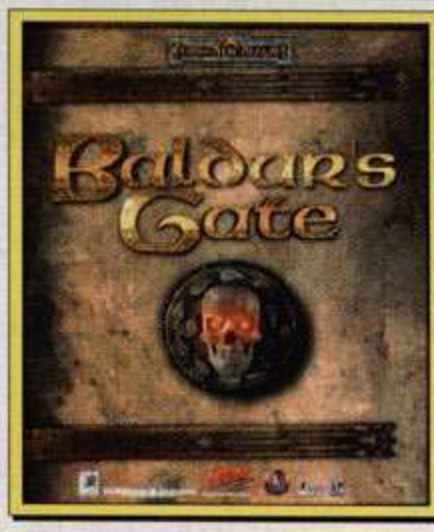

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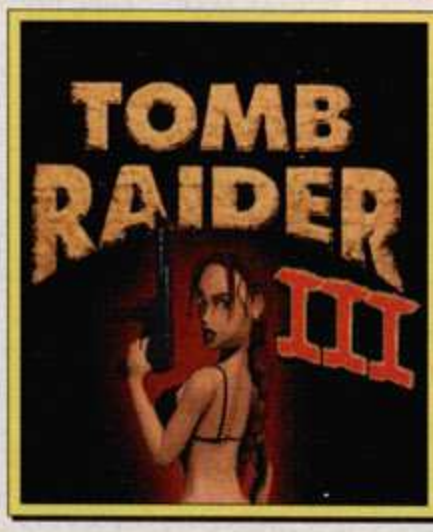

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1. To Enter: No purchase necessary. Only one entry per person, please. Anyone submitting more than one entry will be disqualified. To enter for your chance to be one of eight (8) winners in *PC Games'* The X-Files Game Giveaway, write your full name, address, and daytime phone number (and an email address, if you have one) on a 3-by-5 card and mail it to PC Games, Attn: X-Files Contest, 501 2nd St., Suite 500, San Francisco, CA 94107.

All mail entries must be received by November 1, 1998. Sponsors assume no responsibility for lost, late, damaged, misdirected, illegible, incomplete, or postage-due mail or entries. All entries become the property of the sponsor and will not be returned.

2. Prizes: Grand Prize (1): A copy of the *X-Files* PC game autographed by Gillian Anderson, a Nokia cellular phone, a complete set of *The X-Files* home videos, and a *PC Games* T-shirt plus a one-year subscription to the magazine. Approximate retail value: $1,161. First Prize (2): A Nokia cellular phone, an unsigned copy of the *X-Files* PC game, a complete set of *The X-Files* home videos, and a *PC Games* T-shirt. Approximate retail value: $625. Runners-up (5): An unsigned copy of the *X-Files* PC game and a *PC Games* T-shirt. Approximate retail value: $75. All prizes will be awarded.

3. Judging: All eight winners will be determined in a random drawing from all eligible entries on or about November 26, 1998, by *PC Games* magazine, whose decisions will be final in all matters related to this contest. Judges reserve the exclusive right to interpret all conditions in regard to this promotion without claim for damage or recourse of any kind. By participating in the contest, entrants agree to be bound by the rules and the decisions of the judges that shall be final. Odds of winning depend on the total number of eligible entries received. All winners will be notified by mail. Grand-prize and first-prize winners will be required to sign and return an affidavit of eligibility and liability release within 21 days of notification. If the affidavit is not returned within the given time-period properly executed, or is returned from the post office as undeliverable, an alternate winner will be chosen. If the grand-prize and first-prize winners are under the age of 18, a parent or legal guardian must also sign and provide their social security number on the Affidavit of Eligibility/Release of Liability & Publicity. Except where prohibited, acceptance of a prize constitutes winner's consent to use his/her name, likeness, and biographical data for advertising and promotional purposes without additional compensation.

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6. For a complete list of rules, send an S.A.S.E. to: "X-Files Rules," c/o PC Games magazine, 501 2nd Street, Suite 500, San Francisco, CA 94107.

FACE-OFF

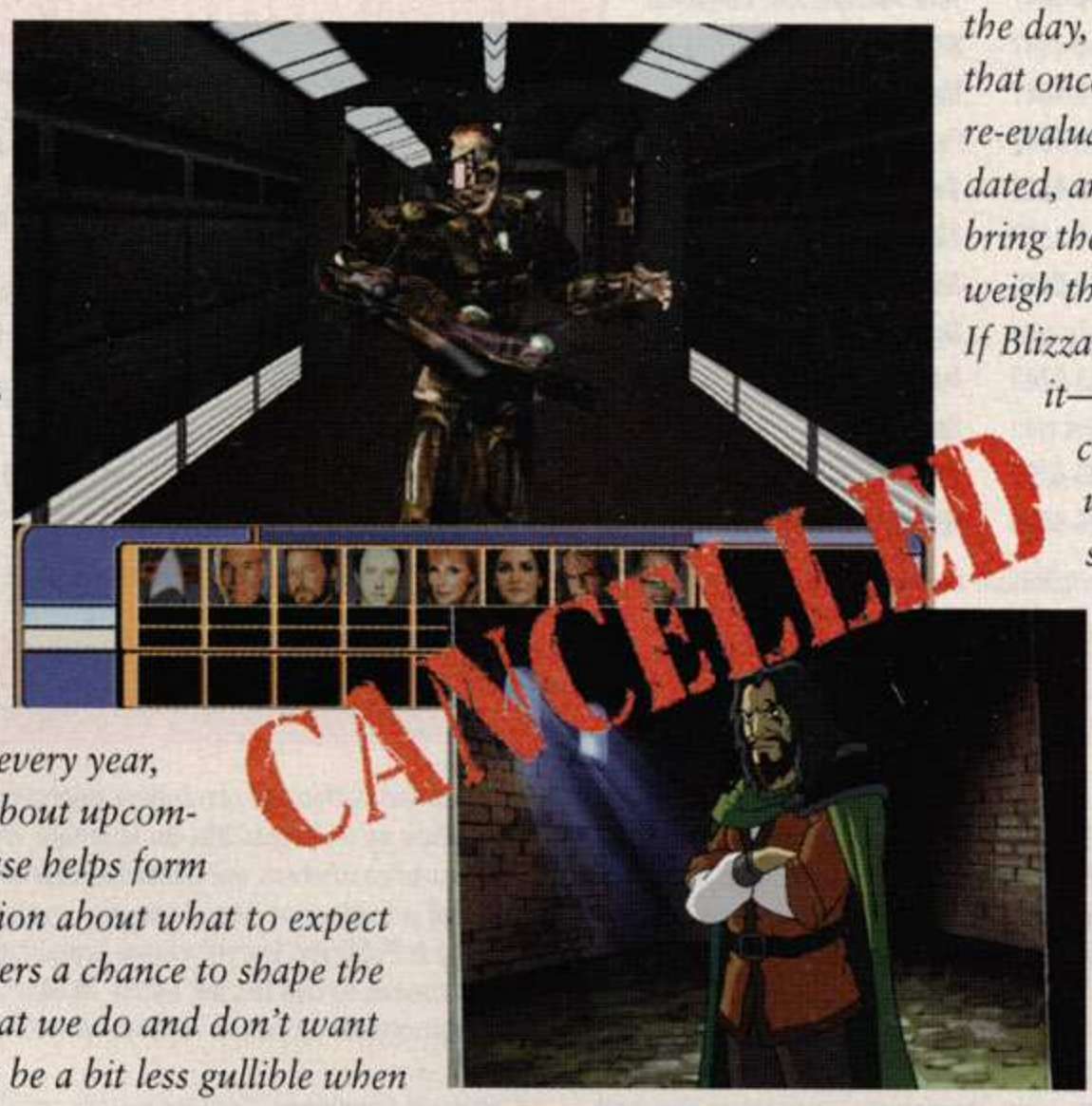
Scarface
TheWeasel

Don't Believe the Hype

Game-ad campaigns routinely begin months, if not years, before a title's release. But when high-profile games are cancelled, they leave behind a huge wake of hype and advertising that can estrange once-enthusiastic game-buyers. Scarface argues in bummed-out **bold** that game companies are souring their customers by inflating expectations for titles that never appear. TheWeasel maintains in insistent *italics* that flame-outs are part of the industry, and that the business of buzz is necessary even though products occasionally vanish into thin air.

The vaporware hype-machine is beginning to alienate gamers, this one included. Three of the titles I was most looking forward to—Guardians: Agents of Justice, Warcraft Adventures, and Star Trek: First Contact—have all been canceled. But not before months and months of advertising promising amazing games that got me super-psyched about each one. When game companies bait and ditch, they're leaving behind a bunch of peeved customers. It's reached a point of unacceptability.

Ah, but what are game companies to do? In an ultracompetitive market saturated with tons of releases every year, they have to try and build a buzz about upcoming games. Advertising before release helps form a game's image, provides information about what to expect in the final product, and gives gamers a chance to shape the game by giving feedback about what we do and don't want to see in the final. I suggest gamers be a bit less gullible when poring over ads. What do you suggest, that game companies shouldn't advertise anything that hasn't shipped yet?



How about holding off on the marketing blitz until it's a done deal that the game will appear at all? Please, just evaluate the game and make sure it's going to ship. First Contact was killed because MicroProse had to wait so long for the Unreal engine that the movie tie-in would've been dead by the time it was released. They could've figured that out before cranking out the propaganda. And it's always surprising that a project like Warcraft Adventures could proceed so far into development, generate so much press attention, and then disappear. Blizzard astonished me with the cancellation—they'd advertised so heavily and made sure that gaming publications and Web sites (ours included) had access to info that led to extended previews, designers' notes, you name it. Everything but a flippin' game! Why should I get excited about the next big game Blizzard hypes? I shouldn't. Until it's in my hands, it's just a pipe dream, as far as I'm concerned. If you were a company exec, wouldn't this destruction of gamer anticipation lead you to hold your fire on the next big marketing campaign?

If I were a company exec, I wouldn't let 'em make half the games that get released, let alone advertise 'em. But I digress. In this fast-paced industry where technology and capabilities are changing seemingly by the day, cancellations will happen. Games that once were a done deal suddenly must be re-evaluated when their look or technology is dated, and the work and resources it'd take to bring them up to tomorrow's standards outweigh the loss of misspent marketing dollars. If Blizzard had decided "Hey, we advertised it—we'd better ship it" and released a clearly inferior, dated game, their reputation and the franchise would've suffered much more than it did from killing the game and explaining why. That you're no longer trusting hype from Blizzard is your business (though I bet I'll catch you sneaking peeks at Diablo II ads); but admonishing the whole industry seems like overreacting.

I understand that nothing is completely foreseeable, but companies should beware of the risks they run if they continue to ratchet up expectation and fanfare on titles they never deliver. Hey, we already put up with enough—release dates that slip for months, if not years, and patch upon patch. In an industry built on and fueled by gamer enthusiasm, it's no good to lead us on and then not put out. So to speak.

Aye, getting everyone hot 'n' bothered and then leaving them high and dry is bad business no matter what your industry. Not to be an apologist for Blizzard, MicroProse, et al., but I'm sure their misspent marketing dollars taught them a lesson.

While Scarface tries to finagle NEA funding so that game pubs can be ad-free, TheWeasel's flipping through mags looking for a Quake IV ad.

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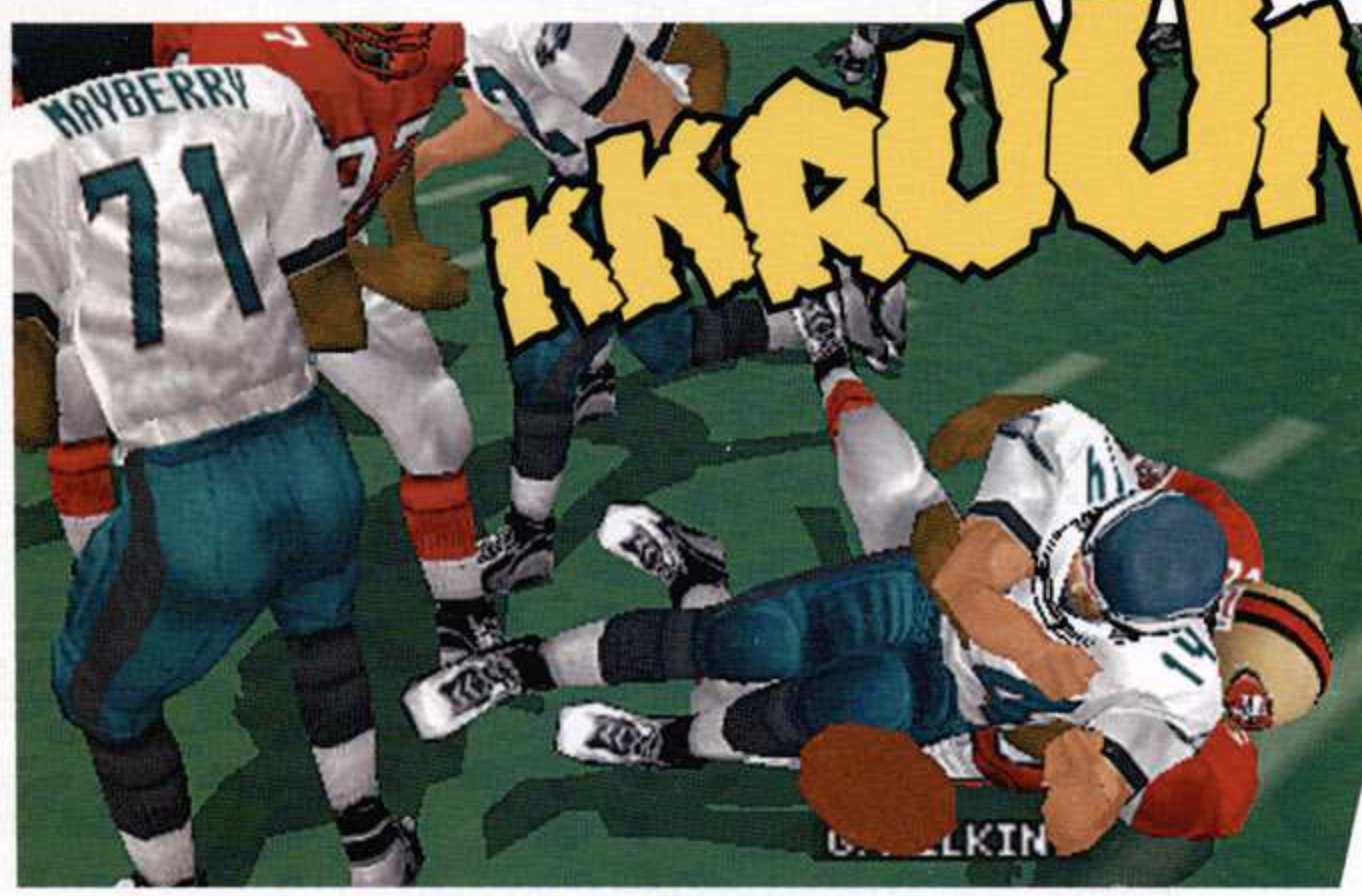

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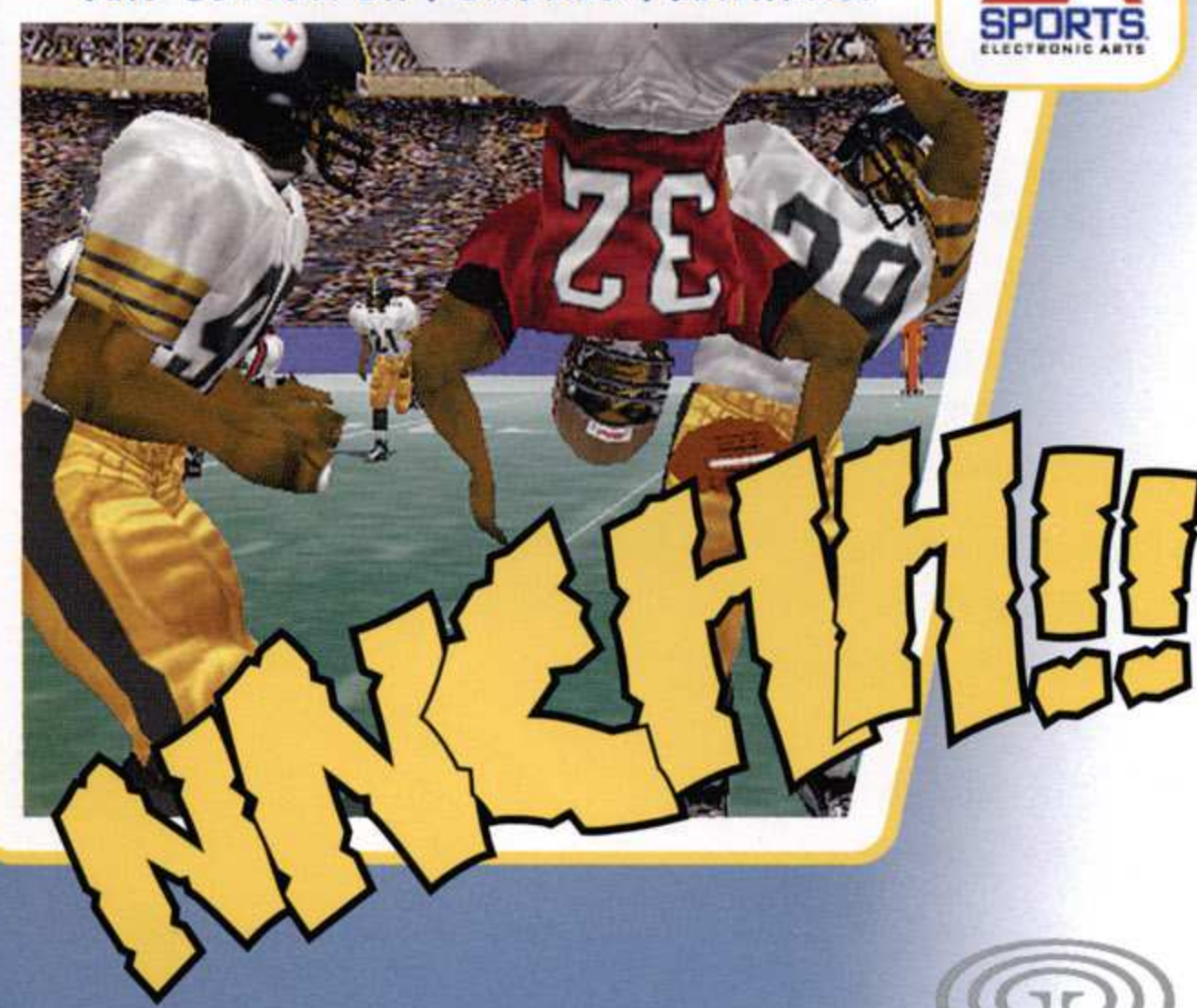

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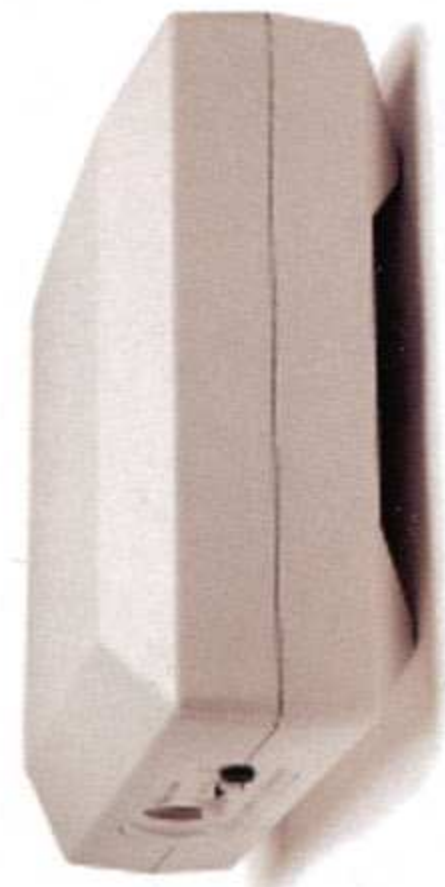

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* Some hitherto unknown alien civilizations may have better value 3D game accelerators, but we seriously doubt it.
Intense 3D spokesmodel, Flame,™ modeled by the creative guys at Zygote Media Group.

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